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ArtJewelry

BEGINNER, INTERMEDIATE & ADVANCED PROJECTS

JANUARY 2014

PATINA POWER!

Follow this easy recipe for a traditional Japanese finish *p. 56*

LEARN TO CARVE WITH YOUR SAW! *p. 28*

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Try a new way to replicate granulation in metal clay *p. 48*

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Learn Korean Damascene

Texture steel, capture gold *p. 32*

+ Make your own custom chisel *p. 36*

METALS

Less flux, solder & mess: Argentium sterling *p. 59*

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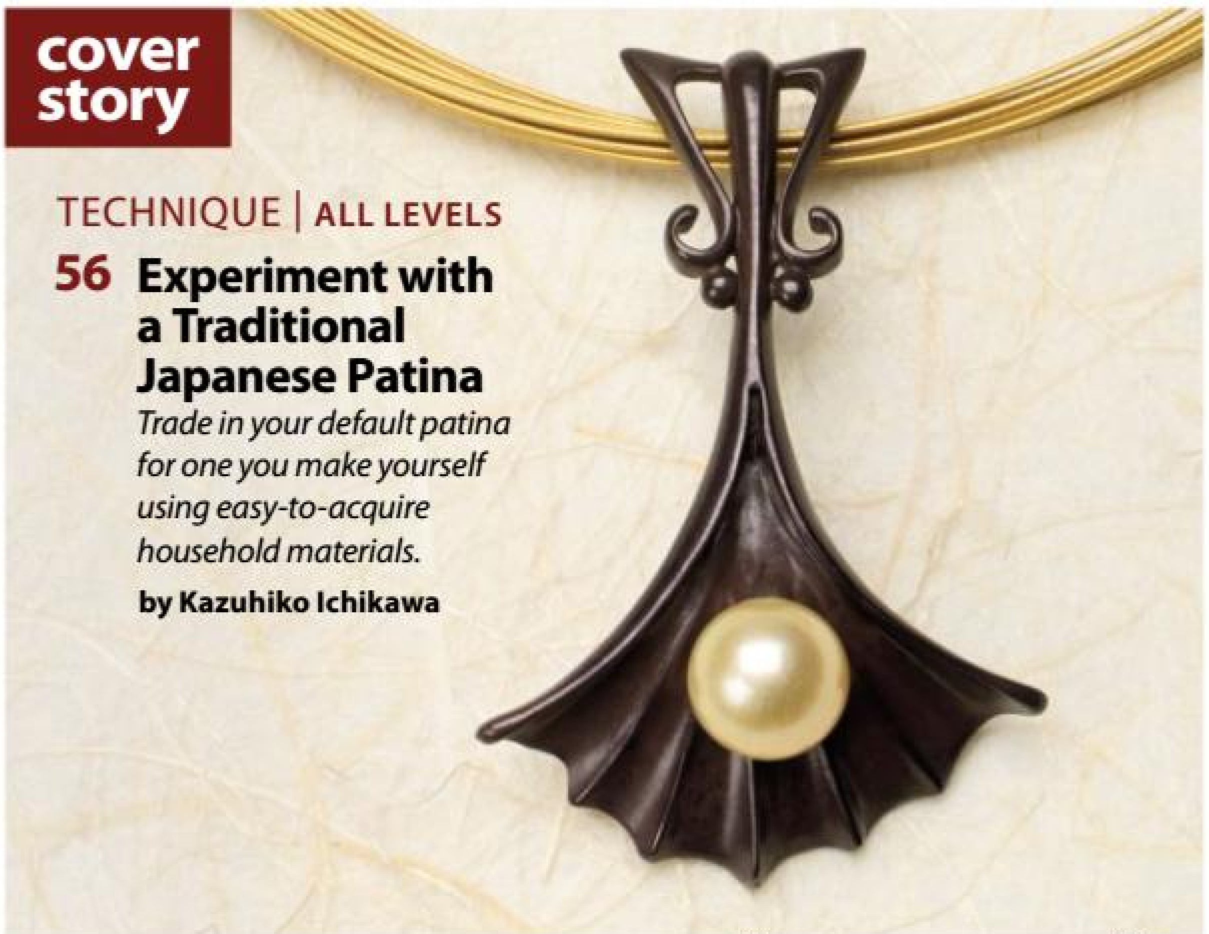

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ArtJewelry

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3 Easy No-Solder Chains

Creating handmade chains is an easy way to add distinction to your jewelry designs.

by Hazel L. Wheaton

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Jewelry as crossroads

I'm particularly proud of the international flavor of this issue of *Art Jewelry*. On the projects side, we have a great traditional Japanese patina recipe from Kazuhiko Ichikawa (*page 56*), and an introduction to Korean damascene from Leia Zumbro (*page 32*). For our artist profile, I interviewed Christine Mackellar (*page 46*), whose lovely Midlands lilt, still distinct after three decades spent living and working in the United States, took me back to my days in England. I was delighted to find out that our spotlighted stone, iolite (*page 26*), was once known as the "Viking's Compass," as its properties helped ancient explorers find their way. And if I could fulfill a wish, I'd love to travel to Malta for the EuroSynergy Conference (*page 11*).

> Our traditions both overlap and diverge, and the ways they do so intrigue us.

Jewelry has never been contained within set borders. Going out on a limb, I'll say that no culture in the history of the world didn't embrace personal adornment in some form. (I invite historians to set me right, if I'm mistaken!) Part of the beauty of our field is to connect to strangers through something that we share. Our traditions both overlap and diverge, and the ways they do so intrigue us. These days, reaching out is easier than ever, as videos stream online, and our digital editions allow readers around the world to access our content.

January also sees the opening of the ultimate worldwide gathering in the gem and jewelry field — the Tucson gem and mineral shows that start in January and run into February (see the special advertising section that starts on *page 64*). Once a year, the world comes to Arizona, and you can hear almost as many different languages while wandering past displays as you can see gemstones!

Hazel Wheaton

hwheaton@artjewelrymag.com

Art Jewelry

Editor Hazel L. Wheaton
Senior Art Director Lisa A. Bergman

Associate Editor Annie Pennington
Assistant Editor Reidin Dintzner
Editorial Associate Theresa D. Abelew

Graphic Designer Lisa M. Schroeder
Photographers William Zuback, Jim Forbes
Illustrators Kellie Jaeger, Jay Smith

Publisher Linda Kast

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Vice President, Editorial Kevin P. Keefe
Vice President, Advertising Scott Stollberg
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Production Supervisor Helene Tsigistras
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Corporate Circulation Director Michael Barbee
Group Circulation Manager Catherine Daniels
Circulation Specialist Valerie Lane
Single Copy Sales Director Jerry Burstein

Advertising
Phone: 888.558.1544 ext. 523
E-mail: adsales@artjewelrymag.com
Group Advertising Manager Ann E. Smith
Advertising Sales Representative Dina Johnston
Ad Services Representative Nanette Hackbarth

To contact our departments:

Customer Service
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Outside the U.S. and Canada: 262.796.8776 ext. 421
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Editorial
Phone: 262.796.8776 ext. 349
E-mail: editor@artjewelrymag.com

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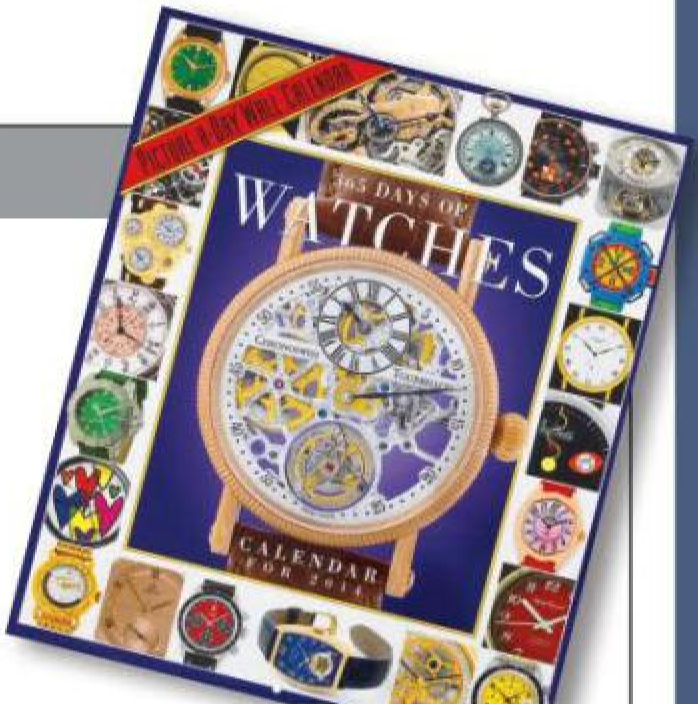
Jewelry and watch calendars



WHERE TO BUY

365 Days of Watches Calendar 2014
Workman Publishing Co., Inc.
ISBN: 978-0-7611-7540-7
$12.99

If you're looking for daily eye candy, two new calendars for 2014 just might fit the bill. The "Jewelry Page-a-Day Calendar" will have you looking forward to tomorrow. With jewelry pieces ranging from ancient Egyptian collars and Ghanaian Asante gold adornment to sleek, contemporary bracelets and earrings, this desktop calendar is a treat for the jewelry maker and admirer alike.

The "365 Days of Watches" wall calendar highlights the craftsmanship and design of watches over the years. While the calendar predominantly features watches from the last century, there are also a few dating back to the 1630s scattered throughout the months. Jewelers and those interested in horology will "ooh" and "ahh" over the variety of timepieces showcased in this oversized, full-color calendar.
—*Annie Pennington*

29 Wednesday January 2014
page-a-day gallery calendar 2014
JEWELRY

WHERE TO BUY

Jewelry Page-A-Day Calendar 2014
Workman Publishing Co., Inc.
ISBN: 978-0-7611-7541-4
$15.99

Metal Clay Origami Jewelry

By Sara Jayne Cole
Lark Books, August 2010
ISBN: 978-1-60059-533-2
$19.95

Book review

Lark Jewelry
Metal Clay Origami Jewelry
25 Contemporary Projects
Sara Jayne Cole

While I was in high school, I had a brief flirtation with origami. I liked the precision and detail, and a great sense of satisfaction came with the transformation of a piece of paper into a flower or other object. Sadly, though, once the pieces were finished, they were quickly crushed, lost, or thrown away. Now they don't have to be. Through an ingenious use of metal clay paper, Sara Jayne Cole explores the boundaries of this traditional technique and makes it new again.

The first section of the book is a compact tutorial for the basic folds and techniques involved in the projects. Interspersed throughout the basics are sidebars that cover tips and tricks for working with metal clay, inserting findings, the types of stones you can fire, and finishing techniques, including working with liver of sulfur. The rest of the book is dedicated to 25 projects that explore the versatility of paper clay. With large, detailed pictures and concise instructions, each project is broken into manageable steps that make the process easy to follow. Cole emphasizes finishing work, and makes many suggestions for adapting the projects suit your own aesthetic. —*Reidin Dintzner*

READER FORUM

Workshop update

After the November 2013 issue went to press, the dates for the Enameling with Charity Hall workshop (which was announced in "Up Front," page 10) were delayed by a week. The new dates for the workshop are March 28–30, 2014. Please contact Genevieve Flynn Studio, Kansas City, Mo., for more information: www.genevieveflynn.com, 816.333.6719.

Correction

In the July 2013 Reader Forum, we misspelled reader Barbara Brosh's last name. We apologize to Ms. Brosh for the error.

Oh, to *stay* organized!

After reading your column ["From the Editor: Oh, to be organized!" *page 6*] and Michael Sturlin's ["Metalsmithing 101: The Bench," *page 24*] in the July 2013 issue, I had to write. I work similar to your style. Clean, admire, be very creative and productive, and then time happens. My bench always looked like a disaster area, but taking 10 minutes to put away, file, or throw out what was in my way enabled me to get in the mood when I sat down.

Now, my day job as an "official" goldsmith requires me to clean my bench at the end of each day. Putting tools away, sweeping up leavings, closing bottles, torch, and tank, and finally turning off the lamp puts closure on the day. As I lean towards ADD and OCD, cleaning up at the end of the day creates a calmer me.

My home bench isn't as tidy as my work bench, but I still enjoy the Zen of rearranging if I'm entering the studio with no specific project at hand. I have come to a (mostly) happy medium at home; if I am in the middle of a project, I put the tools away but leave the parts out. That way, the project is in front of me and I can pick up where I left off.

—Courtney Genise
via email

continued on page 12

WORKSHOP

Intro to Enameling

What: Join Tom Ellis for a fast-paced beginner enameling class that will have you enameling within minutes after the class begins. Starting with a solid foundation in enamel basics, the class moves on to more advanced procedures and techniques. During the two-day workshop, you will learn various enameling procedures such as wet inlay, application of fine silver foil, mixing colors by layering, sgraffito, cloisonné, and more.

When: January 25–26, 2014

Where: The Enamel Foundation Center, Bellevue, Ky.

For more information: www.thompsonenamel.com/workshops

PRODUCT REVIEW

E6000 spray adhesive

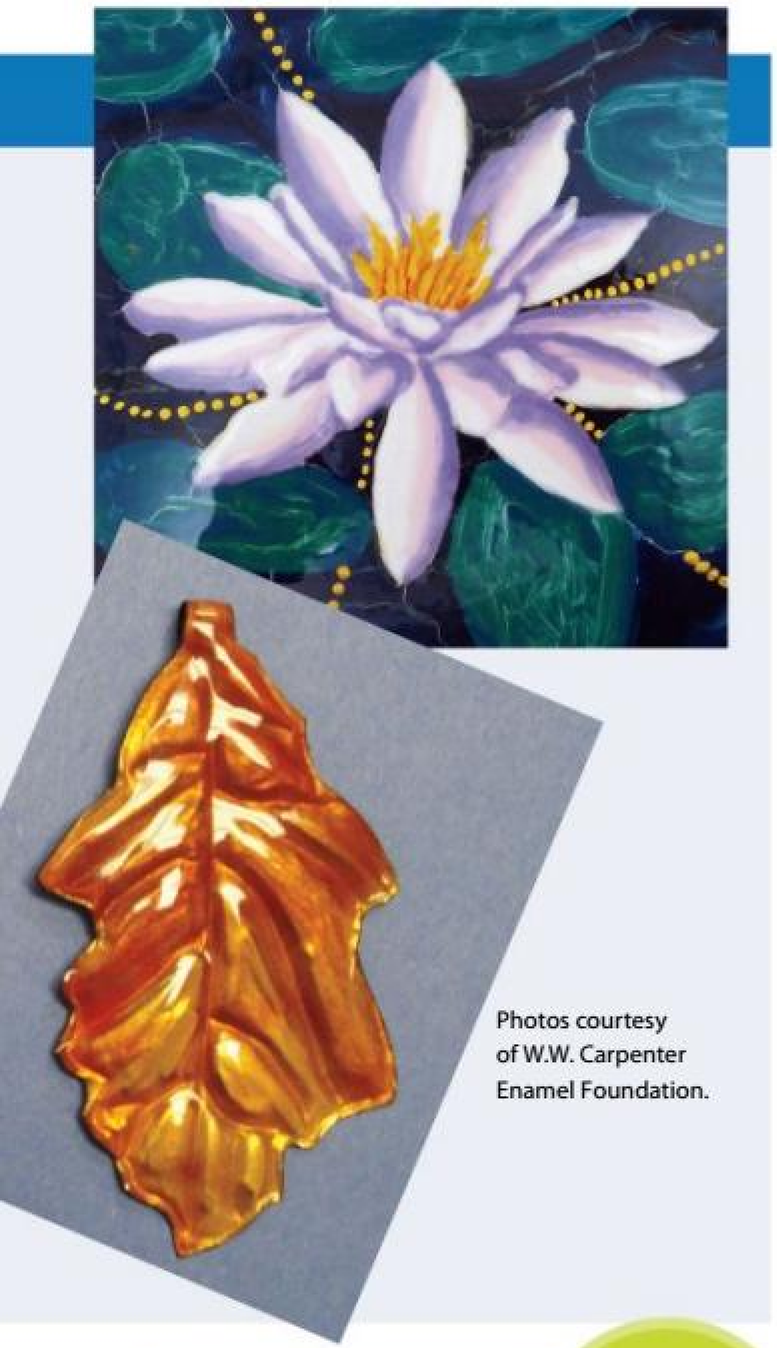
E6000
SPRAY ADHESIVE
8.0 fl oz (236.5 ml)

Like a lot of fabricators, jewelry makers, and DIY-ers out there, I have a close personal relationship with E-6000 (especially under my fingernails). So when I heard about E-6000 spray, I had to try it out for myself. The main difference between the two formulations is that the spray is a water-based glue — which is how it is able to get through a spray nozzle — so I wasn't sure how well it would compare.

I tried the spray to bond a small bit of copper sheet to a slate veneer piece, and also to bond pieces of a tea tin to cork and cured polymer clay in a cuff. At first, the spray was a little tricky; I had to prime the pump top 15–20 times before the spray started, and the first few squirts came out as a stream rather than a mist. Once it got going, it was easy to direct and spread. It worked best with larger pieces where I wanted a good bond, but had a lot of area to cover, like the tea tin/polymer cuff. It didn't work as well with the smaller copper/slate bond — I had to use a paper towel to collect the spray and then dab it on the smaller area. The cure times were similar to the traditional E-6000, though, and the pieces bonded just as strongly. So although I won't give up my go-to tube glue, E-6000 spray is a good thing to have on the shelf. *—Reidin Dintzner*

WHERE TO BUY

E-6000 Tube/Spray Adhesive
Eclectic Products,
www.eclecticproducts.com
$4.99 and up



Photos courtesy of W.W. Carpenter Enamel Foundation.

CONFERENCE

EuroSynergy

What: The Mediterranean archipelago of Malta will host the International Polymer Clay Association's (IPCA) first major event outside of the United States. Three days of pre-conference workshops in polymer clay will kick off dozens of seminars in design, business, technique, and more. Drawing artists from around the globe, the conference will be conducted in English, but translations of key points from the seminars and talks will also be available in several languages.

When: Pre-conference workshops April 28–30, 2014; Conference April 30–May 3, 2014

Where: Malta

For more information: www.synergyconference.net

▲ **Brooch by Kathleen Dustin.** Photo by Charley Freiberg.

◀ ***Spring has Sprung* necklace by Angela Garrod.** Photo by the artist.

▶ ***Rose Collar* by Maggie Maggio.** Photo by Courtney Frisse.

ANNUAL EDUCATION ISSUE

COMING IN MARCH 2014

Learn the **basics of forging wire** into graceful shapes

Take your **bezels** beyond the ordinary

Make a pierced and riveted link bracelet

READER FORUM

continued from page 10

Coil winder changes

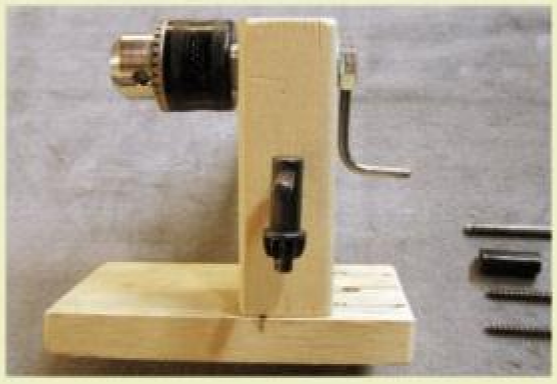
I have an addendum to Howard Siegel's article on making a coiling tool ["Make Your Own Jump Rings? Make Your Own Coiling Tool," November 2010; also available for individual purchase at www.ArtJewelryMag.com].

I found the handle of the coil winder too heavy for my taste so I modified the handle. Instead of using steel washers for the handle, I used ¾-in. quarter round. After cutting four pieces to length, I glued them together and held them together with a heavy rubber band. (A twist tie would have worked as well.) I then drilled four 1⁄16-in. holes from one to another and forced 1 x 16 nails in with a pair of pliers; ¾ x 16 may have been better = would have saved filing off the points. When the glue dried, I drilled a ⅜-in. hole through the center for the ⅜-in. handle bolt. If you use a plane or spoke shave to trim down the center corners on the pieces before assembly, it will make it a little easier to locate and drill the center hole for the bolt.

I also put a piece of copper tubing down the oil hole. This made it easier to get the oil where I wanted it and it may make less mess.

I like the idea of using a wooden dowel instead of metal. It is less expensive to pitch a piece of wood after cutting the rings.

— Kent Struble
Petersburg, Mich.



tell us what you think!

Send your questions, comments, and tips via email to ***editor@artjewelrymag.com****. Letters may be edited for clarity and length.*

PRODUCT REVIEW

Sticky Bead Mat

When you're staring down a 2,000-mile road trip with a toddler in tow, it's a good idea to bring a distraction — or ten. If you've read our blogs (www.artjewelrymag.com/blogs), you probably already know I have a penchant for chain-mailing my way through road trips. I have a wooden tray that I use, but no matter how careful I am, there are always stray jump rings strewn around the car once we reach our destination. So, when this sticky bead mat was presented as something that might help chain mailers, I was eager to give it a true road test.

The mat was too floppy to be used without support, so I placed it in my wooden tray. I dumped out several sizes of rings in different metals and finishes onto the mat and got to work. The rings stayed put as we bounced down some ridiculously rough roads, but still came off the mat easily when I picked them up. I discovered that even when the mat is perpendicular to the ground (and inside a moving vehicle), it held tight to all my chain mail supplies — even the pliers! Plus, the mat didn't leave any residue on my tools or supplies. The rings and scales looked just as clean as when they came straight from the bag.

Several states later, I realized that still had all my jump rings and scales in the tray. I decided to push my luck with the mat when we stopped for lunch. It was around 90°F (32°C) and suffocatingly humid, so I left the tray with the mat and supplies sitting on the dashboard to see if this would alter anything. I suspected that, after roughly an hour of baking in direct sunlight in an enclosed car, the mat might leave some residue on the supplies or tools, or perhaps the tackiness would be altered in some way. Instead, the mat was completely unaffected.

After the road trip, and several chain mail pieces later, I had one final test. The directions assured me that the mat could be rinsed with warm water to clean it and restore any diminished tackiness. What better way to test this than with the help of my faithful studio mutt? I called my dog over and vigorously rubbed the sticky mat all over the wiggly beast (who, in typical lab/pittie fashion, adored the attention). The dog did not get any sticky residue in her fur. Actually, she looked shinier. Then I realized that all the loose hair, dust, and whatever grime was hiding in her coat had transferred to the now filthy and no-longer-sticky bead mat. But as promised, a quick rinse of warm water cleaned the mat, and after it air-dried the tacky quality was restored. So, not only is this a great addition to my standard chain mail supplies, but I might pick up an extra one just for the dog! *—Theresa D. Abelew*

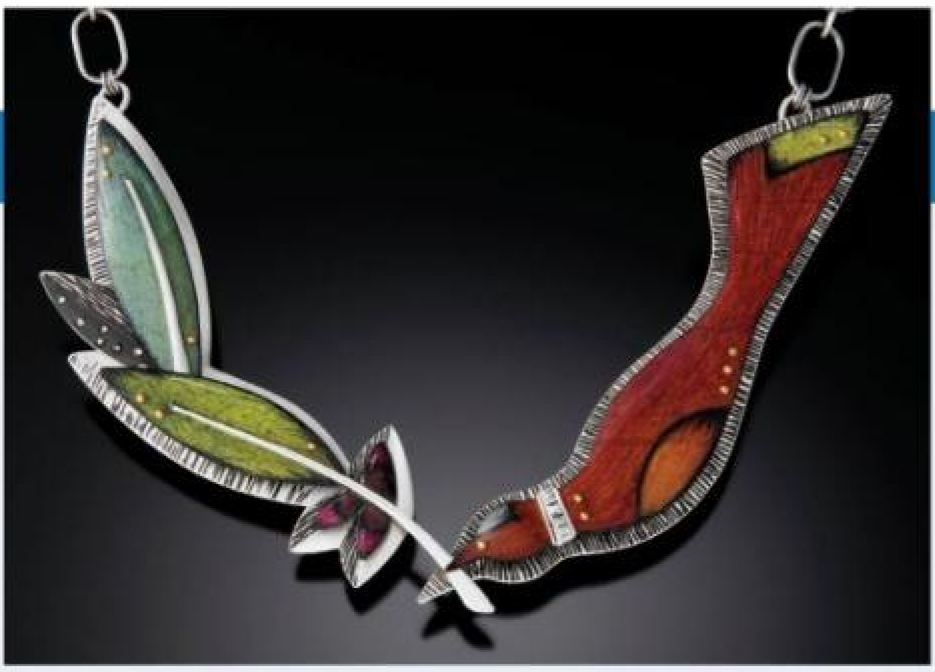
WHERE TO BUY

Sticky Bead Mat
Fire Mountain Gems,
www.firemountaingems.com
Small: 8 x 4½ in. (20.3 x 11.4 cm),
item number: H20-5525BS, $7.45
Large: 8 x 10 in. (20.3 x 25.4 cm)
item number: H20-5526BS, $13.52

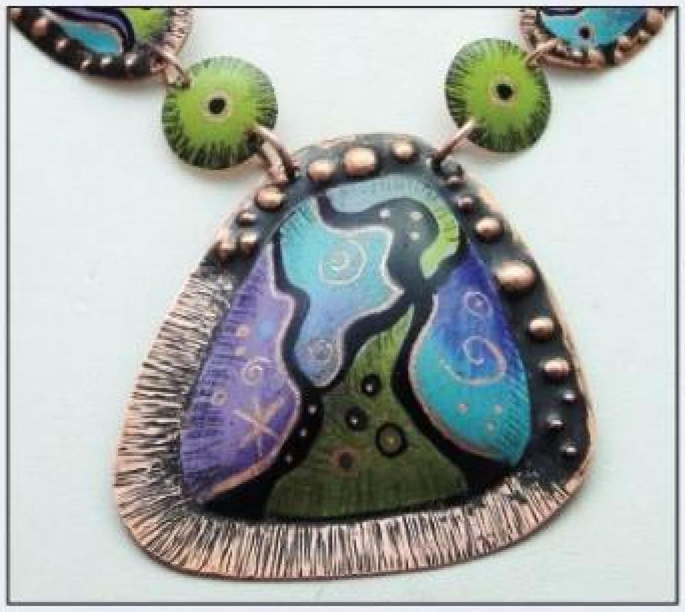
CALL FOR ENTRIES

Ganoksin's 4th Annual Exhibition: Color Embraced by Metalsmiths

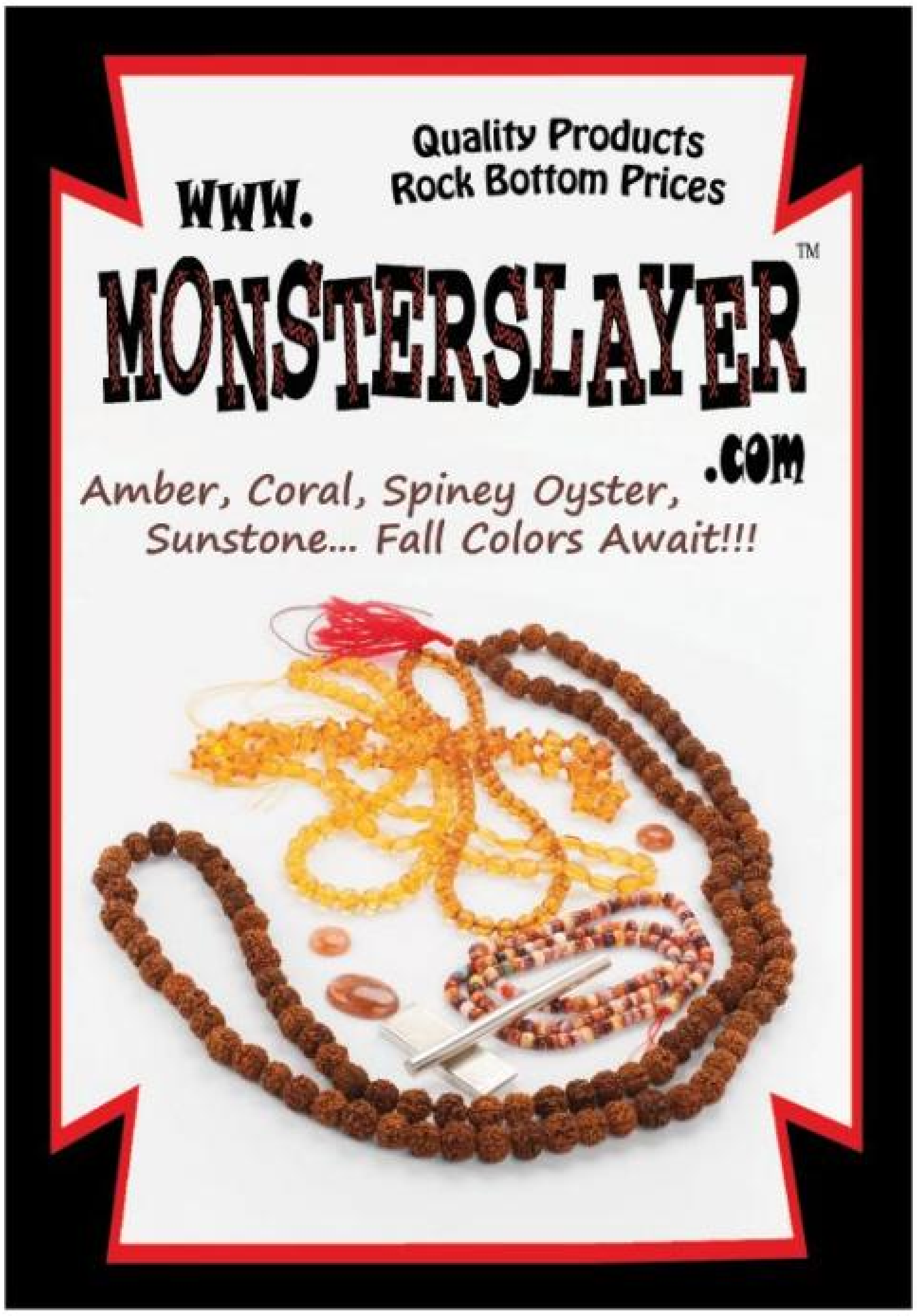
What: This online exhibition is open to all metalsmiths, professional to beginner, from around the world. The work should go beyond color as an accent or focal point and showcase color as the primary visual element. Each artist can submit up to six images at no charge. However, because the exhibition is composed of submitted photographs, be sure to review thoroughly the criteria posted on their website before submitting; any photos not meeting the criteria will be automatically rejected.
When: Applications accepted until February 15, 2014.
Where: online
For more information: www.ganoksin.com/exhibition/submit/changing_hues-submit.php AJ



▲ ***The Gift*** **necklace by Deb Karash. Sterling silver, copper, brass, diamonds, and Prismacolor. 8 x 3 in. (20.3 x 7.6 cm) with chain.**
Photo by Larry Sanders, Sanders Visual Images.



► ***Dream Time Fantasy*** **necklace by Roxan O'Brien. Copper and colored pencils. 20 in. (50.8 cm) long. 3 x 2 in. (76 x 51 mm) focal.**
Photo courtesy of the artist.



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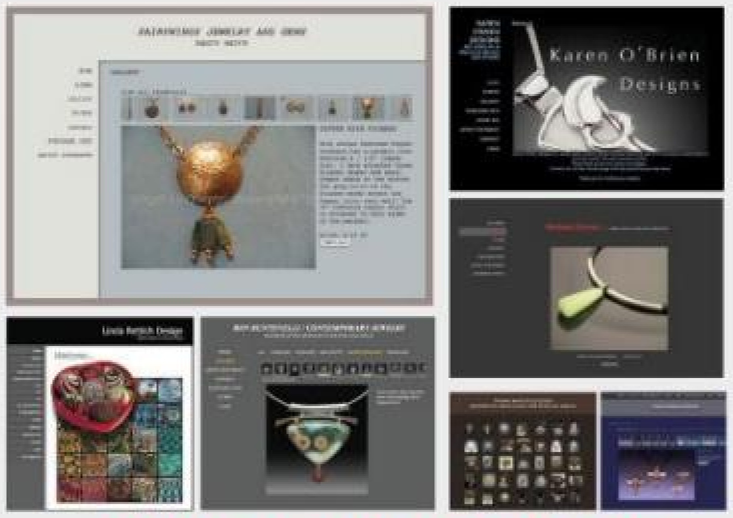

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The Daily Grind

by Christopher C. Darway

You may forge a sword into a plowshare, or a plowshare into a sword, but in either case you will have to grind and sharpen the edge. This has never been an easy job, and there are colloquial expressions to attest to this work. “Keep your nose to the grindstone.” “He has an axe to grind.” Some grindstones were so large, the worker would be suspended above the wheel on a plank. Hence, nose to the grindstone.

Grindstones and whetstones

The earliest grindstones date from 800 AD, were made from sandstone, and were turned with a handle. A foot treadle, and then water power using leather belts to transmit energy followed the hand crank. Water would either be dripped on the top of the wheel, or the wheel would have a trough under it filled with water. These were (and are still) called whetstones. Whetstones are used to sharpen knife blades, chisels, and scissors. This basic mechanism has not changed much. Every farm, besides having an anvil in the barn, also had a manually powered grindstone.

I found a bench-mount hand-powered grinder on Amazon. Really cute little tool, about $50 of modern manufacture. I am discussing bench grinders, but there are also combination grinder-and-whetstone machines. The whetstone runs at a much slower speed through gear reduction, while its grinding stone spins faster.

Bench grinders

What is a bench grinder? It’s a grinder that fits on a bench. Amazing! It is almost identical to a double-shaft polishing machine. Both have what are called arbors (shafts) on both sides. Both spin at about 3500 RPM (revolutions per minute) and can have a horsepower (HP) rating from ⅓ to 1½ HP. One-and-a-half HP is a *lot* of power. The motors are very similar, and the shafts will accept the same spindles and arbors depending on the size. However, the grinders usually have a cast shield on either side for protection. I guess you could remove it on one side if you’d like. They are found in nearly every auto garage, metal shop, wood studio, and jewelry studio.

Prices run from $30 for a factory reconditioned unit to $500 and higher for a serious metal-shop machine. Models run in the $75–$170 range, and can be found in any of the major hardware retailers. They usually come with two vitrified grinding wheels: 36 and 60 grit.

As you look at different brands, you will see similar design features. That’s because most grinders come from one or two factories in China and are sold under different house brands. DeWalt, Skil, Craftsman, Delco, Baldor, Milwaukee, and Porter-Cable are all American-named companies who are still in business but don’t make all their tools here anymore; they stick their name on imported products.

There are varying degrees of quality, and it’s noticeable when comparing a grinder from Harbor Freight to, let’s say, a similar one from Sears. Caveat emptor (buyer beware)! Both are probably made in China and have similar-looking castings, shape, and size, but maybe there’s a better on/off switch and nicer paint on the Sears grinder, if that matters to you.

Types of abrasives

Modern grindstones are made from particles of varying materials with a range of hardness and grain size. You want an abrasive that is harder than what you’re cutting. The most common abrasives are:

- Aluminum Oxide (A*)
- Silicon Carbide (S*)
- Ceramic (C*)
- Diamond (D, MD, SD*)
- Cubic Boron Nitride (B*)

**These letters are marked on the edge of the wheels for identification.*

Diamond and cubic boron nitride cut almost any metal, glass, or ceramic. Aluminum oxide, silicon carbide, and ceramic are referred to as conventional abrasives. Most wet/dry sandpaper is made from aluminum oxide or silicon carbide. If you have worked with anodized aluminum, you may have noticed that saw blades, drills, or any other cutting tools wear out and become dull quickly. When aluminum is anodized, aluminum oxide — the same stuff wet/dry sandpaper is made from — is formed on the surface of the metal. It is equivalent to sawing through sandpaper.

There are a few more things to know about grinding wheels. First, there is grain size: 8–1200. (Think of grit on sandpaper.) Then there is wheel grade: A–Z, with A

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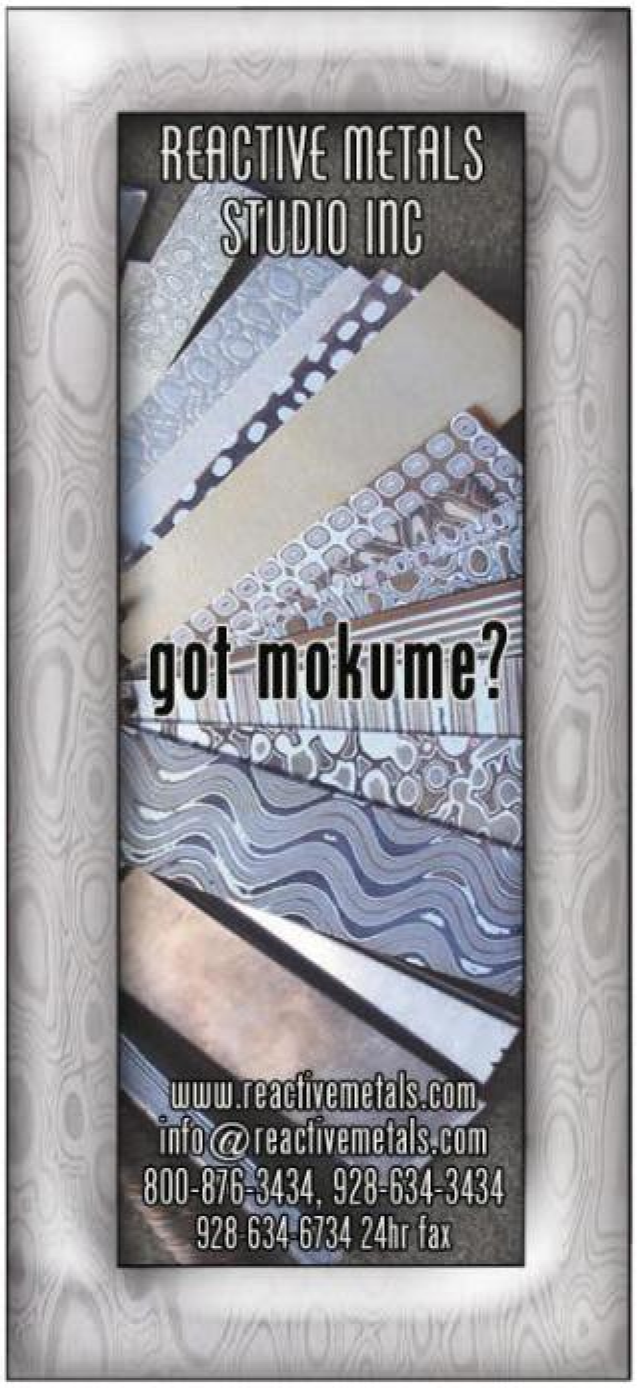

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being the softest, Z the hardest. The type of binder determines the wheel grade. Wheel bond is the material or method by which the grains are held together. The three most common binders are vitrified, resinoid, and rubber. Vitrified is similar to sintering, resinoid is a synthetic, and rubber is usually silicone.

Jewelry studio use

In jewelry work, a Mizzy heatless wheel is either aluminum oxide or silicon carbide, and is vitrified. They're great on metal, glass, ceramic, or enamel. Mizzy wheels came from the dental industry, and have been a staple in jewelry studios for years. Separating disks are in the resinoid family, and they can also cut steel and stone, but tend to wear quickly. Rubber wheels include Cratex and silicon-rubber wheels, ranging from coarse to very fine. Pinkies (I don't think it's a trade name) contain iron oxide, which is found in red rouge polishing compound. Very high finish.

Most of you have used those three types of wheels with your flex shaft or Dremel tool. So why would you need a large grinder in a jewelry studio? Well, there are techniques, such as repoussé, chasing, and engraving, which require steel tools that need to be modified and shaped by grinding. Flex shafts and Dremels cannot do this kind of grinding; hammer modification requires a powerful motor and a proper wheel. You need a bench grinder.

Using the grinder

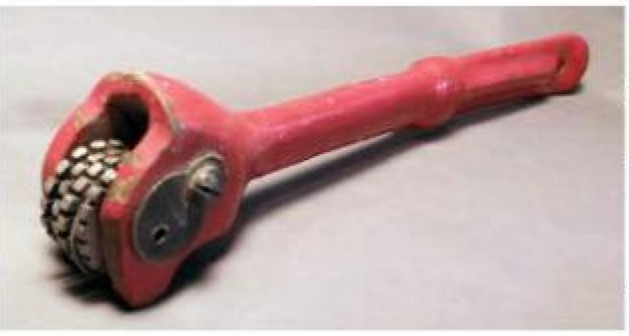
Your grinder has an adjustable safety shield over each wheel. Centered in front of the wheels are adjustable tool rests. You need an open-end wrench or small adjustable wrench to lock these in place. Look at the instructions for proper setup! The tool rests should be parallel to the floor, but can be angled to the wheel in order to support a tool that needs to be ground at a specific angle.

Most grinders weigh about 20–37 lbs., heavy enough to remain stationary during light grinding. However, I recommend that you permanently mount the grinder to your bench so that it won't accidentally fall off.

Time to fire this puppy up. There should be no vibration — vibration is a sign of a cheap machine or wheels. When grinding, keep a small bowl or dish of water nearby. Periodically dip the piece you're working on in the water to keep it cool; it's possible to change the steel's temper if it overheats. It's not wise to grind really soft metals such as aluminum or copper. These and other like metals will load up the wheel.

Redressing

To clean and redress the shape of the wheel, you need a wheel-dressing tool. We all love tools. The wheel dresser has a cast steel handle with hard steel star-shaped wheels at one end. This tool is pressed hard against the grinding wheel as it's spinning. It reshapes the wheel. Lots of noise and stuff flying around. Can you say "safety glasses?"



Photos by Christopher C. Darway

Spark chart

When you start to grind steel tools, you will see sparks coming off the wheel. Different steel alloys produce different shaped and colored sparks. Some are short, while some have long tails and large bursts. The sparks look like a July 4th sparkler. With practice and a spark chart, you can determine the alloy makeup of the steel you're grinding.

My spark chart is from a 1940 Seventh edition (first printing 1908) of *American Machinists' Handbook*. This particular book traveled from San Diego to Tokyo Bay, then returned to Brooklyn, N.Y., and now sits on a shelf in my office. It belonged to my dad when he was in the Navy during World War II. He forgot more about metals and machines than I'll ever know. AJ

Christopher C. Darway can be reached via email at darway design@earthlink.net.

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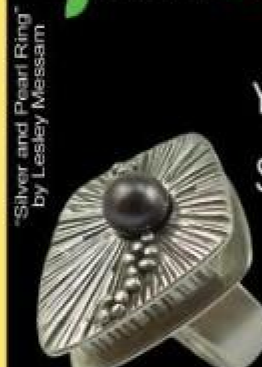

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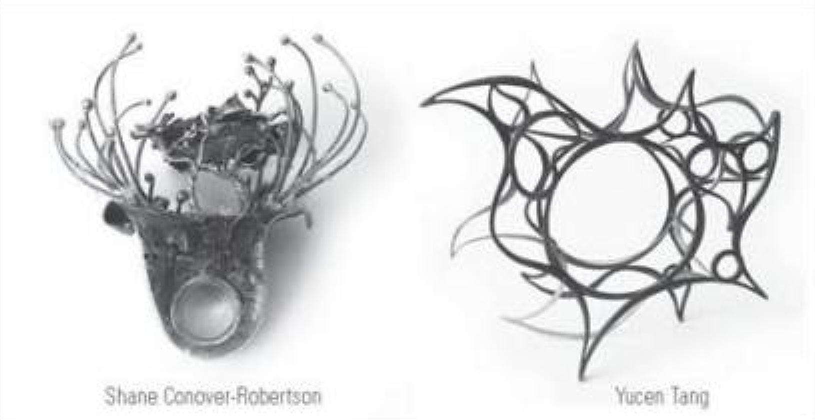
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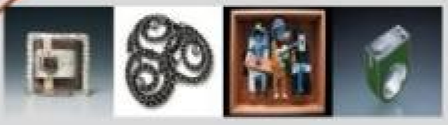

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Copyright in the Age of Pinterest

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by Marlene Richey

The advent of Pinterest and other image-based online services have made it easier than ever before for images of your work to spread around the world. That's a great thing for marketing. But the flip side is that anyone can help themselves to ideas with — unfortunately — few or no repercussions.

Your copyrights, patents, and trademark are important parts of your company's assets, and it's in your best interest to protect them. Intellectual property is a valuable commodity and the sad truth is, it is substantially more vulnerable since the advent of the internet.

While the Internet may have "changed everything," it did, in one sense, change nothing at all. The steps that you can and should take to protect against infringement by virtual poachers are the same things you should do to protect yourself against copycatters at local art fairs. At times, it may seem futile, but you should take steps to protect your designs (copyrights), your mechanical findings, processes, and techniques (patents), and your logo, business name, brand or collection name (trademarks).

Self protection

First of all, understand and accept that you cannot completely protect yourself unless you refuse to show your work to anyone, and that's self-defeating. If you want to become a well-known designer or maker, people need to see your work so you can sell it and make a living — it's that simple. These days, that means putting your work on the Internet. It's the new rule of the marketplace: No website = no business. If you don't have a business website or numerous other internet and social media venues, then you aren't in business. Not to mention other profitable avenues such selling through Etsy, advertising, shows, and retail galleries, all of whom should be promoting your name and work.

Second, do the paperwork:

- Copyright your designs.
- Patent your processes and mechanical findings.
- Trademark your name and brand.

You can read all about the copyright, patent, and trademark filing process in detail online through the United States government. At $35 per filing, copyrighting is fairly inexpensive. Patents and trademarks are more expensive and usually require the assistance of an attorney well-versed in the process to help.

Mailing an envelope to yourself and keeping it sealed is widely considered a "poor man's copyright." But be aware it's an urban legend; it has no legal validity.

Help! I've been infringed!

In the United States, an item is considered copyrighted as soon as you make it. To legally protect your intellectual property, you must file an official copyright. When push comes to shove, going to court is expensive, time consuming, and frustrating, so use discretion before going that far.

Talk it out

If you think you have been infringed upon, first contact the people you feel are copying your work. Have a polite but frank conversation with the apparent infringer. Don't jump to battle stations; the majority of apparent infringements are unintentional. Many times, artists are subconsciously influenced and accidentally incorporate elements into their designs. I've seen this happen time and again; without exception, if the parties discussed the issue, it was amicably resolved.

Sometimes, it's a mistake. Parallel development does happen, and many visual elements have been around for so long that both artisans may be drawing inspiration from the same source (as opposed to your drawing it from the source and the other person drawing it from you). You also might discover that the "copycat" has been making that style of jewelry longer than you have. Your goal for the initial conversation should be to discover the truth, not to assume the worst and go in with guns blazing — that makes it harder to reach an amicable solution, and *much* harder to make amends if you find out that you're in the wrong.

If you're satisfied that they are infringing upon your copyright, and the conversation doesn't work, a cease-and-desist letter will usually settle the matter.

Cease and desist

A cease-and-desist letter is issued by an attorney to either an individual or an organization. It is both a request to stop that they stop what they're doing, and a threat that if they do it again, they'll face legal action. You're establishing that you intend to protect your copyright to the full extent of the law. Twice in my career I have had an attorney write a cease-and-desist letter for me; both times, the issue was immediately resolved to my satisfaction. This process alone usually is enough to halt the other party.

Receiving a cease-and-desist order can be scary. Once, when I was part owner of a small design start-up for a specific project, I was served with such a letter. We'd unwittingly chosen a name that was legally the property of a camping-equipment company. I immediately contacted the company, explained that we were dealing in jewelry and they in camping equipment, and that ours was a limited, specific project. They allowed us to use the name under the condition that if we got larger or went public it would have to change. It was a win-win outcome.

Going to court

The importance of taking legal action is that once you let someone get away with copying you, it's then open season for anyone else to help themselves. Many times, how you deal with the first infringing company sets a precedent.

Many large jewelry designers employ a full-time attorney just to handle these situations. I know independent makers who have legally gone after a larger company for copyright infringement and lost, and I know of a couple who have won. Just understand that taking legal action is a choice of last resort. It is costly in many ways, so make sure you really are being professionally and monetarily harmed before embarking on that path.

In her more than 30 years in the jewelry business, Marlene Richey has run a wholesale business and a retail gallery. She can be reached by email at marlenerichey@gmail.com.

avoid problems before they arise

Benjamin Franklin said: "An ounce of prevention is worth a pound of cure." What can you do to prevent copyright infringement *before* it happens?

Have a strong, cohesive look. For artistic and commercial as well as legal reasons, you should have an identifiable look to your work. If anyone copies it, the similarities will be apparent.

Use the © symbol. Use the copyright symbol on your website and marketing materials wherever you can. Many instances of infringement stem from ignorance; too many people aren't aware that artistic copyright is a thing, or they just don't think. Make it obvious by making good use of the © symbol. Also spell it out on your materials: "All designs are copyrighted by ABC Designs." I recommend then trademarking ABC Designs!

Be a moving target. Don't get lazy; keep designing. Come up with new and innovative ways to explore your look. Stay a step ahead of the competition.

Get your work published. Getting your work in print helps with marketing, but it also helps in the event of legal problems. Your work in print establishes a definite date when your piece was introduced tp the marketplace. And keep your clippings! I keep a binder with copies of all editorial, marketing, and promotional references about me in plastic sheet protectors. This is not to feed the ego, but for real legal reasons. (Okay, it's also good for the ego!)

Be aware. Stay up to date on what other makers are creating. It's better to catch a potentially problematic situation early rather than to wait to see what happens.

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Iolite

by Richard M. Shull, G.G.

Many of today's most popular gemstones were first appreciated not for their pretty colors or rarity, but for special properties that were not yet reproducible by humankind. These gem-quality minerals were so useful that it wasn't until more advanced technology became available to replace them in their practical roles that they found their way into the jewelry world.

One such gemstone is iolite — known as the "Viking's Compass," it was one of the stones used by the Vikings for ocean navigation.

Practical effects

Iolite (its name derived from the Greek word *Iodes*, meaning "violet") is the gemstone variety of cordierite, a mineral discovered by French geologist Louis Cordier in 1813. However, iolite was known long before it was recognized to be a variety of this mineral. It had been given different names, including dichroite (Greek for "two-colored stone") and water sapphire, due to its property of pleochroism: The stone can appear to be different colors when viewed from different sides. In one direction, it may be sapphire blue while in another, it may be nearly colorless.

These properties allowed the Vikings to use a polished piece of iolite to find the sun on foggy or overcast days in order to navigate on the high seas. Air molecules polarize the sunlight in a perpendicular direction from the line of sight to the sun. Changes in color when looking through a polished piece of iolite allowed a Viking navigator to determine the direction of polarization, using the known direction of the sun to stay on course.

In modern times, synthetic cordierite is used in making catalytic convertors for cars and trucks. Since the cordierite crystals have low thermal expansion on one axis, they are carefully aligned during the manufacturing process to prevent thermal-shock cracking.

Locations

Iolite is found in a variety of locations around the world. Large amounts have been mined in India, and good quantities have been recovered in Australia, the United States, Madagascar, Namibia, Tanzania, Burma, Brazil, and Sri Lanka. A deposit in Wyoming has produced large crystals, including one incredible specimen over 20,000 carats. This deposit appears to be extensive, and has the potential to produce a U.S. commercial supply of iolite gemstones.

Color & clarity

The most desirable colors of iolite are blue-violet (which can resemble fine tanzanite) and a variety of blues that resemble blue sapphires. Faceted iolite in these colors are often more affordable than the gemstones they resemble.

Stones that are "eye clean," meaning that the inclusions are usually visible only with a loupe, are most commonly encountered under five carats. Clean stones become more rare as the size increases. Lightly to heavily included cabochons and beads are available in much larger sizes than faceted stones.

Faceted stones, calibrated cabochons, and beads of numerous styles, with a color palette of light blue, grayish blue, dark blue and blue-violet, can be found in a wide range of price points, making iolite an easy choice for many styles of jewelry.

Cutting challenges

Due to its pleochroic properties, iolite can appear to be three different colors when viewed from three different axes. Before it is cut, a rough piece of iolite can appear to be a sapphire-like blue from one side, colorless from another, and gray or yellowish from another.

While the pleochroism may have been a boon to the Vikings seeking to find their way in the fog, it presents distinct challenges to the gem cutter, who must orient the rough gemstone perfectly in order to capture the preferred color. A mistake by the cutter can result in a potentially blue or violet-blue stone ending up as a gray, pale, or yellow faceted gemstone.

Some iolite can have an "inky" dark color, and the cutter may cut the stone a little thinner to make the color appear lighter and more attractive. While this

Top: Sterling silver and iolite earrings by Brian Scholdt. Opposite page top, stone courtesy of Ray Lopez, photo by Richard M. Shull, G.G.
All other stone images by Thinkstock.com.

IOLITE: USE AND CARE

Mohs hardness: 7–7.5

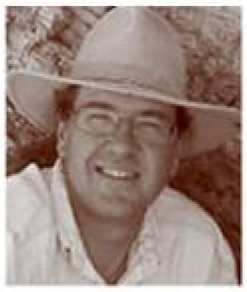
Suitable uses: Iolite is appropriate for all types of jewelry, including rings and bracelets.

Cleaning: Clean with warm, soapy water. Ultrasonic and steam cleaners are usually safe.

type of cutting does improve the color, it diminishes the optical properties of the stone. These shallow-cut or "windowed" stones should be much less expensive than stones that had a less saturated color to start with and were cut to the optimum angles.

Hard and natural

If you are choosing a blue gemstone, iolite has much to offer. It is durable enough for all types of jewelry, including rings and bracelets. Is also one of the few gemstones that is not treated or enhanced to remove inclusions or improve its color, making it a perfect choice for those who prefer natural, untreated gemstones for their jewelry. AJ



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Carving with Saw and File

by Michael David Sturlin

Everyday bench skills are often ripe with potential that is yet to be harvested. All it takes to reap the bounty is the willingness to continue improving our use of tool and material. Saws and files are two of the most essential tools for jewelry making — you can increase your skills with these tools, your confidence, and the value of your pieces by adding decorative effects that will set your work apart. Such details make the work look more complex and refined, and yet are just the natural extension of a basic skill set you already possess. All it takes is patience, practice, and an eye for detail.

Beyond basic

Sawing lines, shapes, patterns, and openings brings familiarity with the saw. Smoothing edges, shaping contours, and making surfaces flat and square, softened and rounded, or sharp and angled does the same with the file.

You can get even more from your tools by using the same techniques to create decorative effects. While you practice carving you'll also be improving a whole range of skill sets: measuring; layout; marking with dividers; using a scribe; holding, clamping, and stabilizing; incising lines with a saw; and excavating with files.

Getting started

To begin, think three dimensionally. Picture the design emerging from your material. Think about what is prominent and what recedes; identify what material will be taken away and what will remain.

Carve trial samples on scrap metal to test ideas and hone your skills. Making samples is a great way to get comfortable with your tools and map out the process.

Think ahead

This is the sequence of steps:

1 Lay out the design
2 Mark the metal
3 Incise the lines
4 Excavate the depth
5 Remove the edges
6 Define the corners
7 Refine the surfaces

Layout

To do good work, you need reliable registration marks. Prepare your surface by using an abrasive pad to give it a nondirectional satin finish, then transfer your design to the metal. First sketch the design on the metal with a pencil. Once you have confirmed the pencil lines, trace through them with a scribe and dividers. A line scratched on the satin surface is clearly visible under a bench light.

Line it up

Next, use a graver to define the scribed lines, leaving a shallow groove as a path for the next tool. Or, you can incise the lines with your saw. There's a simple trick to this: Instead of putting the blade on the scribed line and pulling down, as we would for a saw cut, push with a gentle upstroke. Rather than engaging and cutting, the teeth lightly scratch the line into the metal. Once you've made a tentative mark, go deeper with the saw until the line is well established. Then follow the groove of the incised line with the next tool.

Push forward

Just as the graver or saw blade widened the scribed line, now you'll use a file to widen the engraved or incised line. Push the file forward with short, controlled strokes. As with regular filing, push on the forward stroke and release pressure on the backstroke. As the file moves deeper into metal, the groove expands.

The file you use determines the width and depth of the groove. Square and triangle files expand the groove equally to each side. An inclined barrette file cuts to only one side. Use round, half-round, round joint edge, or crossing files to make concave depressions.

The cut of the file you use is determined by the amount of metal to be

fixing files

Filing details frequently involves cutting one surface without marring an adjoining surface. This means making a common file modification: a safe face.

If you're using a barrette file, you won't need to do this; a barrette file has teeth only on the bottom flat face, so it won't cut into any surface but the one you're filing. But you may need the same feature on a different tool. Using a bench grinder to remove the teeth from one side of a square or flat file makes a file safe to cut one side of a 90° corner. Bringing the surface to a high shine transforms the safe face into a burnisher.

Escapement files are delicate tools designed more for refinement than removal and will break under excessive force. You'll break a few as you develop your skill. Be sure to save the broken files — you never know when you'll need to modify one for a specialty purpose!

Photo by Michael David Sturlin.

removed. Start with #2 cut standard needle files. Use #2 cut escapement files for delicate details. To remove a lot of metal or to contour large areas, use a coarse file to rough in the shape. As you reach your desired depth, switch to finer files to refine the shape. (Keep in mind that the cut of each file is proportional to the length of the tool; a #2 needle file is coarser than a #2 escapement file.)

Use confident strokes to keep the file where it needs to be. Adjust the pressure to make the file work efficiently. As your skill develops, the tool will become an extension of your hand. As always when filing, support your work against a secure fixture, such as the bench pin.

Keep it even

If your pattern has more than one element, adjust each groove incrementally in sequence, rather than working on one at a time from start to finish.

I always keep count of my saw and file strokes. It makes duplication more reliable to use the same number of strokes on each groove. Unless I change the pressure or angle of the tool, my results are identical.

Hold and control

Firmly holding small objects is one of the challenges of jewelry making. Setting your piece in a holding tool and bracing the tool braced against the bench pin makes it easier (and safer!) to apply firm pressure while keeping the piece stable. Hand vises, ring clamps, and pliers enable holding either from the outside or the inside.

Tapered wood spindles (available from most jewelry suppliers) make inexpensive and easily customized holding aids. You can also make holding sticks from wooden dowels and bamboo chopsticks. Saw and file the end to fit an opening. Add a slight taper, and you can wedge the aid in place.

Finesse and finish

Use a #4 cut file to refine surfaces that will be polished. To ensure details remain crisp, work with finer files.

Then, sand the surface to remove any remaining file marks and scratches. Start with the finest-grit paper that is effective to remove file marks (coarse sandpaper can diminish detail rather than accentuate it). Then switch to a sanding stick. A traditional sanding stick is too large for intricate details; to access smaller areas, make sanding sticks from Popsicle sticks and tongue depressors.

Keep in mind that the wood of the stick will compress under the pressure of the strokes; flat areas will become rounded as you work. Using a strip of sandpaper creased tightly around a file to sand the grooves and edges of your design will help you maintain crisp lines.

For areas not accessible to be polished, use finer #6 and #8 cut escapement files; these are excellent for creating smooth, even surfaces. You can hand-polish a well-filed surface by burnishing it with a polished steel tool.

Accountability

There is another carving consideration: the loss factor. Files remove metal; sometimes they remove a little, sometimes they remove a lot. As you carve, the filings will accumulate as a fine metal dust. This dust, called lemel, isn't easy to melt and repurpose into new material, as you would do with larger scraps. Filings are usually destined to go back to the refiner for recovery. The expense of sending your dust to a refiner means an increase in your material expense; be sure to factor it into your material costs. Metal dust is heavy, and carving produces a lot of it; determine the amount of dust by weighing your pieces before and after carving them.

Some artists recycle clean filings by fusing the metal dust onto other surfaces to add texture and color. AJ

Michael David Sturlin is an award-winning goldsmith, jewelry artist, and educator. Contact him via email at michaelsturlinstudio@cox.net.

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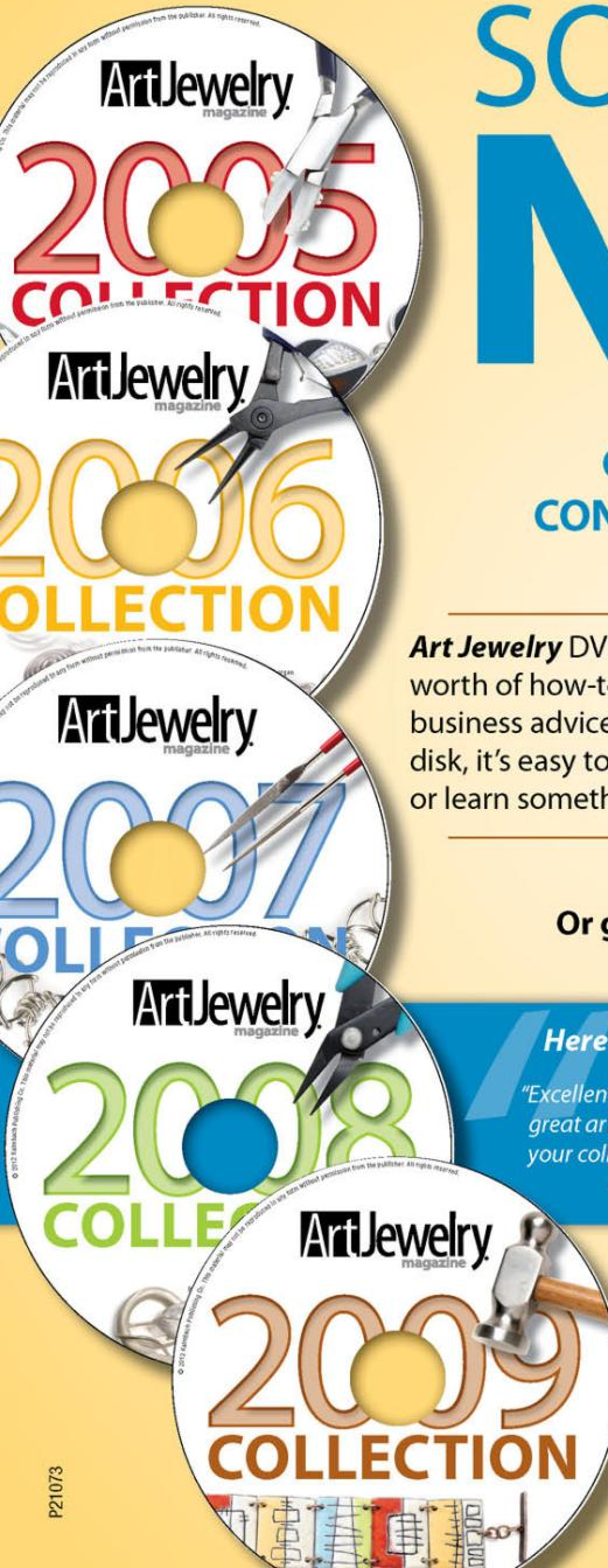

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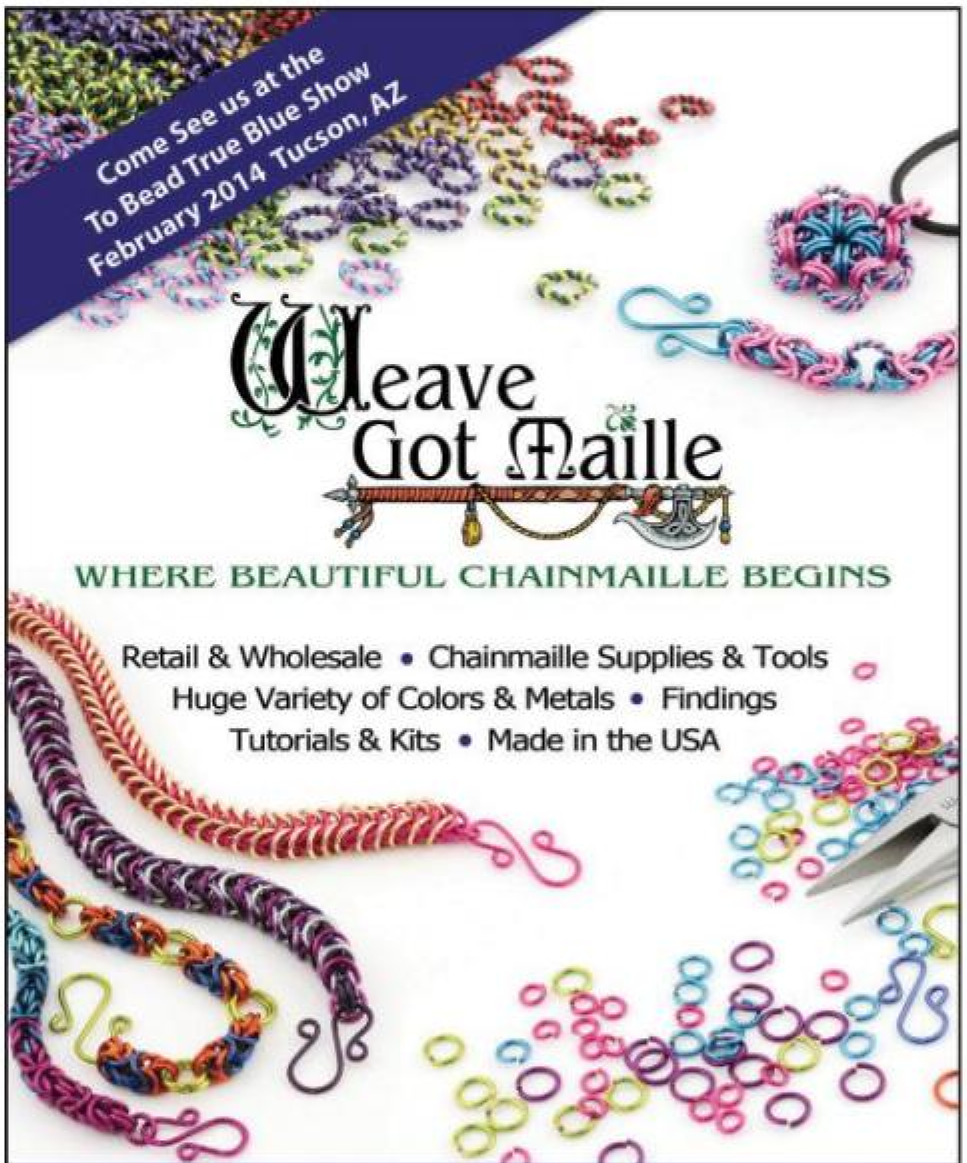

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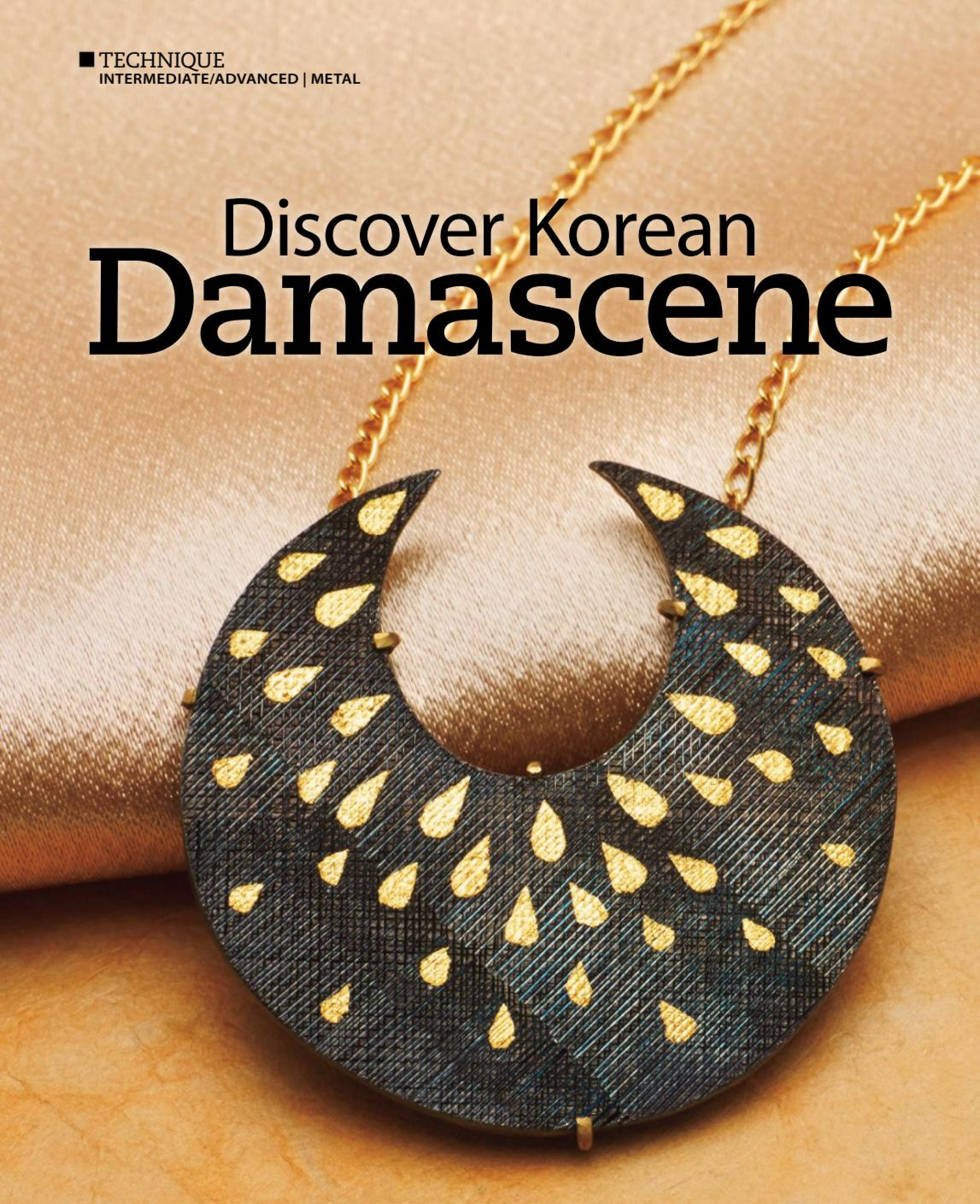

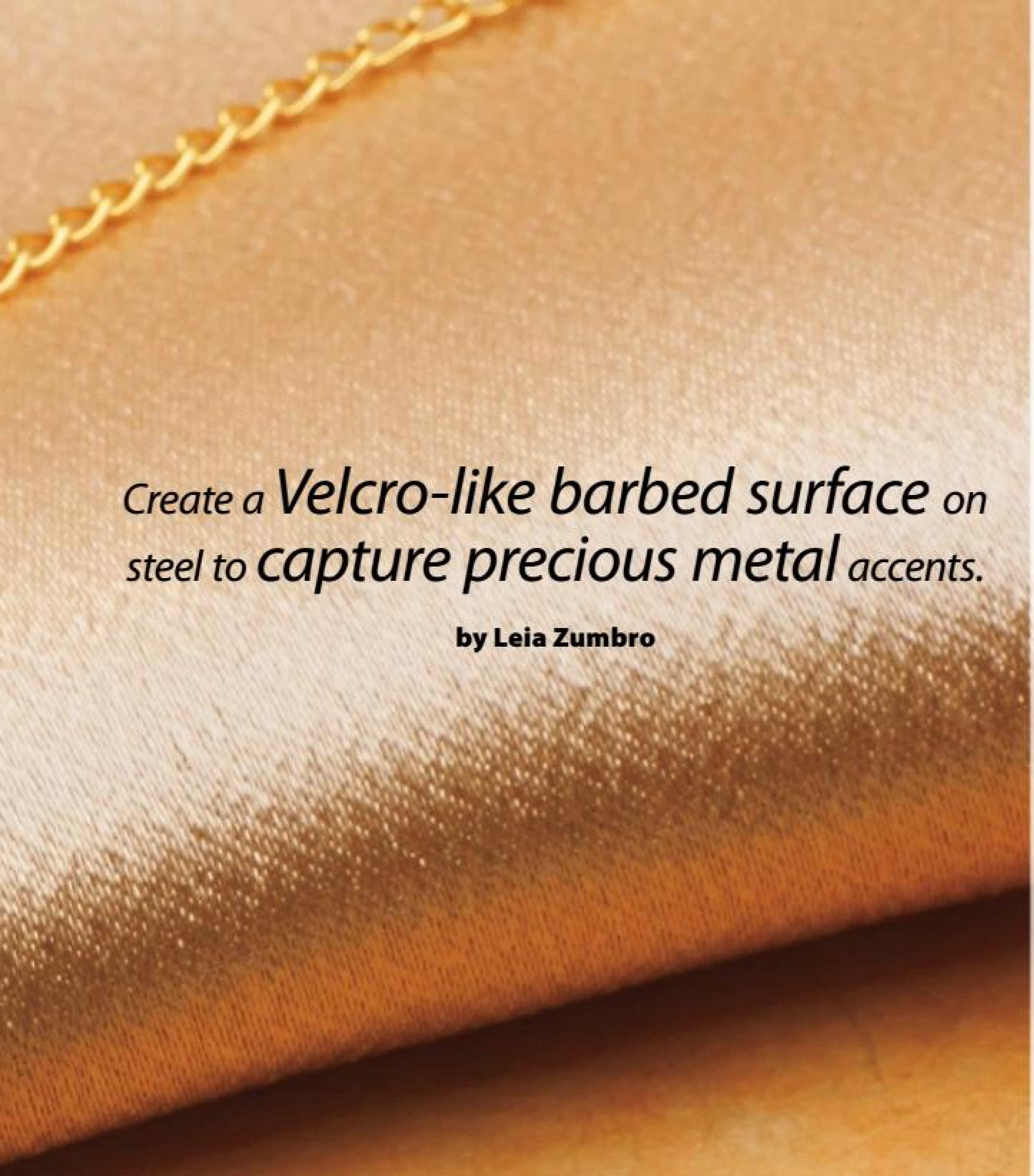

Create a *Velcro-like barbed surface* on steel to *capture precious metal* accents.

by Leia Zumbro

Damascene is a process of inlaying high-karat gold or fine-silver wire and foil into a sheet of bronze, iron, or steel without the use of heat. It's a technique practiced around the globe, and there are as many variations of the techniques as locations where it's used.

The process I'm sharing is the specifically Korean style of damascene called Poe-Mok Saang-Gum. Poe-Mok means "cloth," referring directly to the warp and weft in a tapestry. Saang-Gum means "inlay." This technique was introduced to me by my undergraduate professor, Paulette Myers, as taught to her by Korean metalsmith Komelia Okim.

In Poe-Mok Saang-Gum, the artist chisels the entire surface of the steel in four different directions, creating a Velcro-like surface that grabs and holds the foil and wire. The measurements of the chisel (see "Make Your Own Custom Chisel," *page 36*), and the use of the small hammer to inlay foil are specific to the Korean technique.

materials

- Cold-rolled mild steel sheet, 18-gauge (1.0 mm), annealed and clean; amount determined by design
- 24k gold, fine-silver, or pure copper foil (0.025 mm or thinner) and/or wire (30-gauge [0.26 mm] or thinner); amount determined by design

toolboxes, *page 76*

- Hammering
- Finishing

additional tools & supplies

- Jeweler's saw frame with a #1, 2, or 3 blade
- Damascene chisel (see "Make Your Own Custom Chisel," *page 36*)
- Honing stone with oil
- Ziploc bag
- Scissors, craft knife, or paper punch
- Pliers, variety
- Scrap metal sheet (optional)
- Hot plate (optional)
- Tweezers
- Torch, fireproof surface, and striker
- Matte aerosol sealant (optional)

Find out where to buy supplies, *page 79*
See Safety Basics, *page 75*

BASICS & VIDEOS

Learn fundamental techniques in these bonus tutorials:	B	🎥
Basic sawing of metal	●	●
Using a honing stone		●
Sanding	●	
Annealing wire	●	●

B Basics, *page 73*
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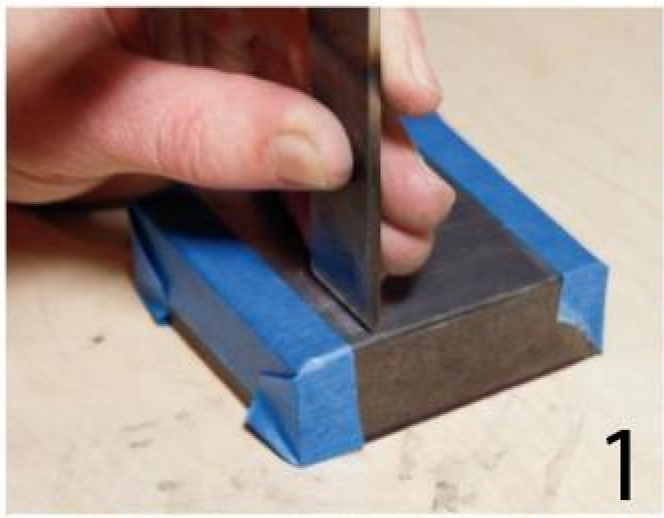
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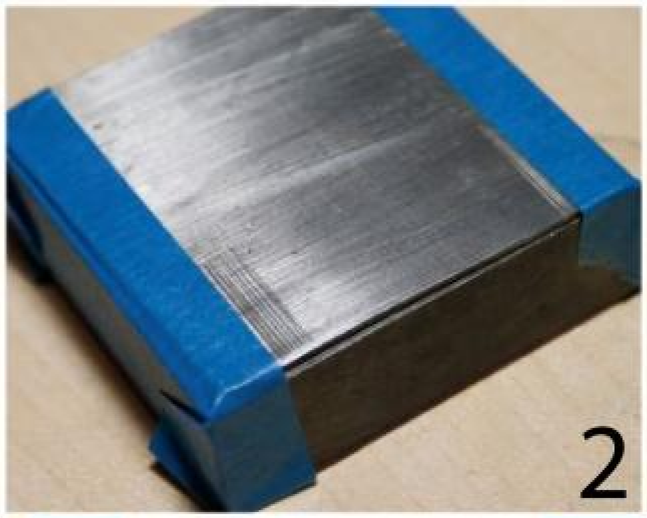
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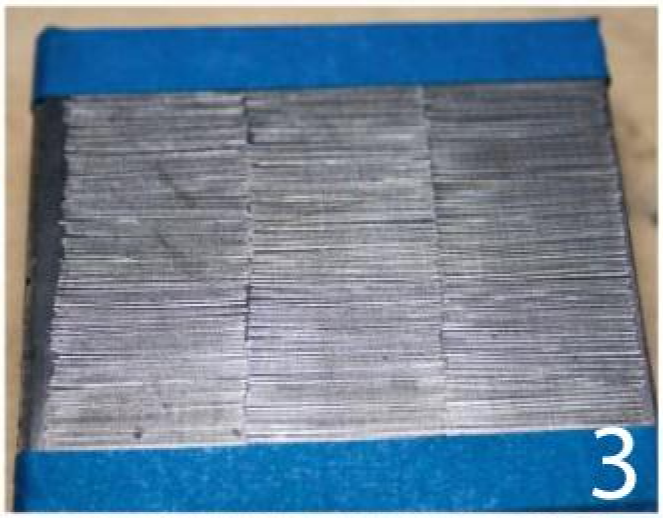
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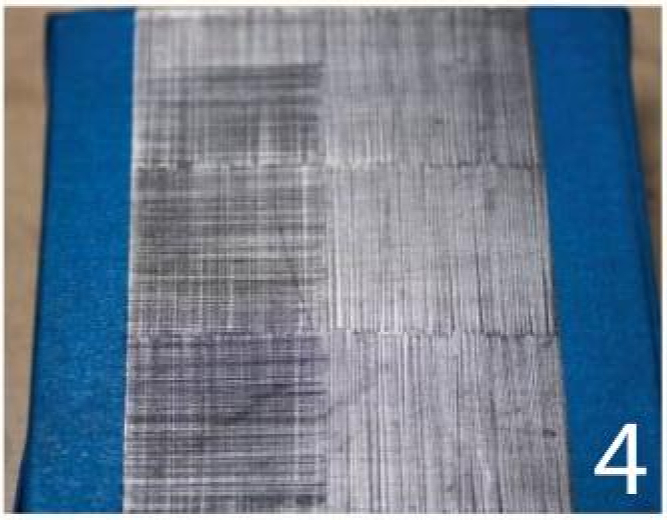
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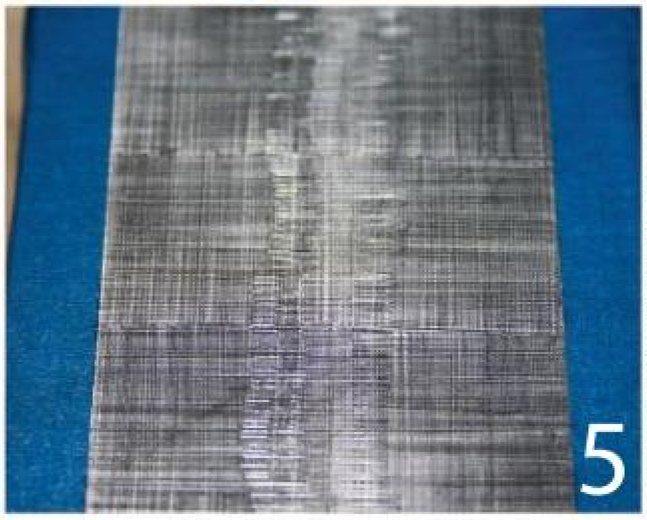
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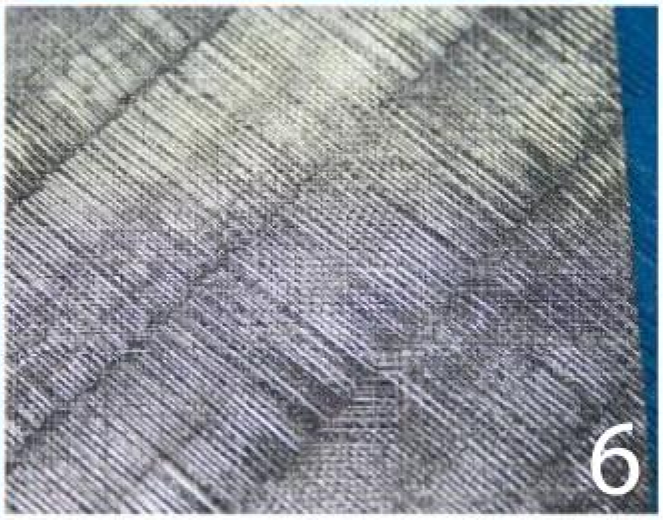
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Steel plate

Prepare the steel plate. Use a jeweler's saw and a #1, 2, or 3 blade to cut a piece of annealed and oil-free cold-rolled mild steel to the approximate size of your project or a steel bench block.

NOTE: Start with a larger piece of steel than you think you'll need in case you change your mind about your design.

Tape the steel to the bench block with painter's tape, covering approximately ¼ in. (6.5 mm) of the blank on each end.

Set your completed damascene piece in a setting that complements your design. (back view)

Chisel the steel horizontally. Align a damascene chisel with the bottom edge of your steel blank.

NOTE: If you're right handed, start at the bottom right corner; if you're left handed, start at the bottom left.

Hold the chisel perpendicular to the steel plate **[1]**, and strike it with a chasing hammer. Move the chisel a hair's-width above the first mark, and strike the chisel again. Repeat, keeping your marks evenly spaced **[2]**. Repeat until the entire surface is covered in horizontal chisel marks **[3]**.

NOTE: Sharpen your chisel as needed with a honing stone and oil (see "Sharpen Your Chisel," *opposite page*). I tend to sharpen mine every inch or so.

Chisel the steel vertically. Rotate the steel plate 90°, and repeat to chisel the entire surface as before **[4]**. When you're finished, the surface will be covered evenly with vertical and horizontal marks **[5]**.

Chisel the steel diagonally. Rotate your steel plate 45°, and repeat to chisel the entire surface diagonally **[6]**.

Rotate the plate 90°, and repeat to chisel the steel again diagonally in the opposite direction.

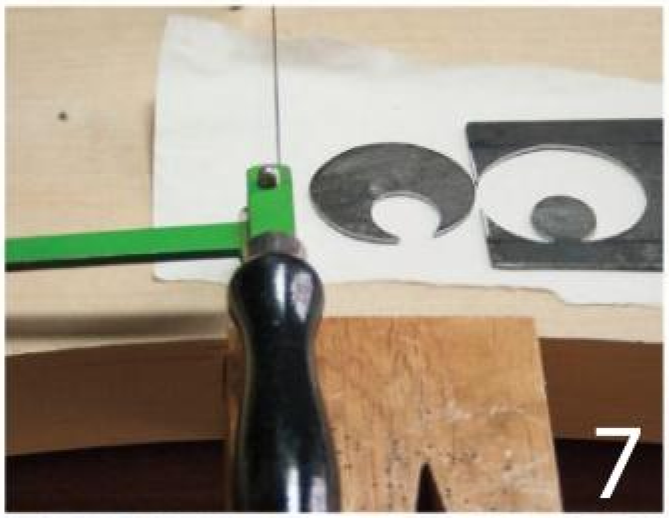
Cut your steel shape. Draw the shape of your piece on a piece of paper, and cut it out. Set the chiseled steel blank face-down on a clean sheet of paper, and use a fine-tip permanent marker to trace your cut-out shape onto the back of the steel.

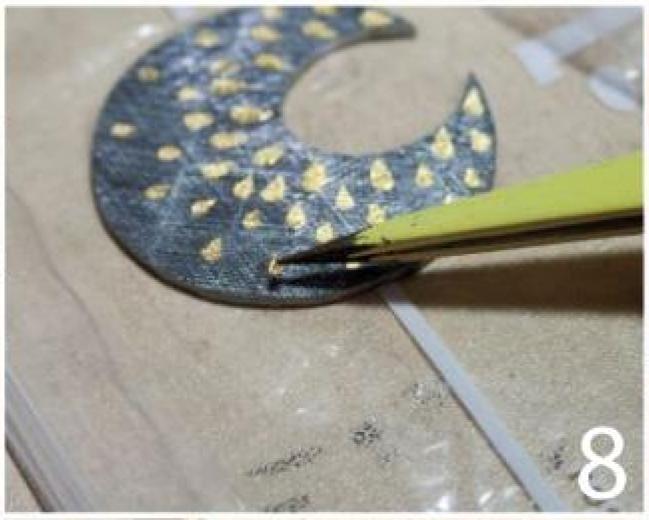
Keep the clean sheet of paper underneath the steel (this protects the chiseled surface), and use a jeweler's saw with a #1, 2, or 3 blade to cut out your shape. Place a fresh sheet of paper under the steel cutout to protect the surface **[7]**.

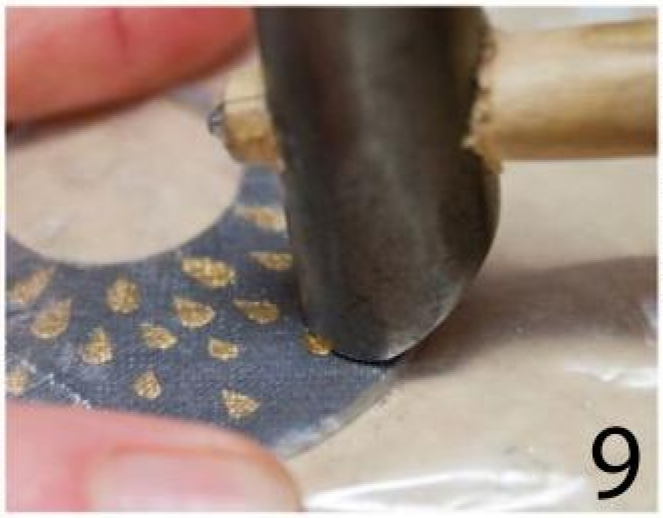
Use a file and progressively finer grits of abrasive paper to remove the saw marks and refine the edges of your steel shape. Oil will transfer from your fingers, so be careful not to touch the steel's surface.

Protect the steel. Cut open the side seams of a Ziploc sandwich bag (Ziploc bags are thicker than most brands and hold up better during the inlay process). Unfold the sandwich bag, and place the chiseled steel on one half of the bag so that when you fold it back to its original shape, the steel piece is inside. This creates a clean, easily accessible work surface.

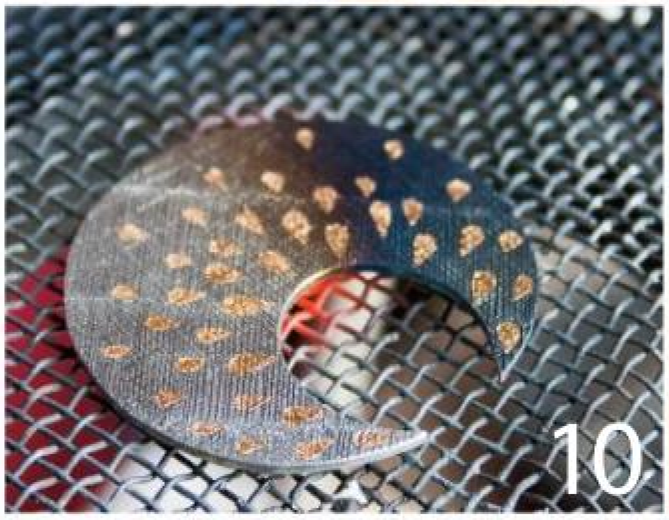
NOTE: The steel, foil, and wire need to stay clean and dry, and the plastic allows you to touch the piece and put your inlay metal down without getting the steel dirty or wet, which would cause it to rust.

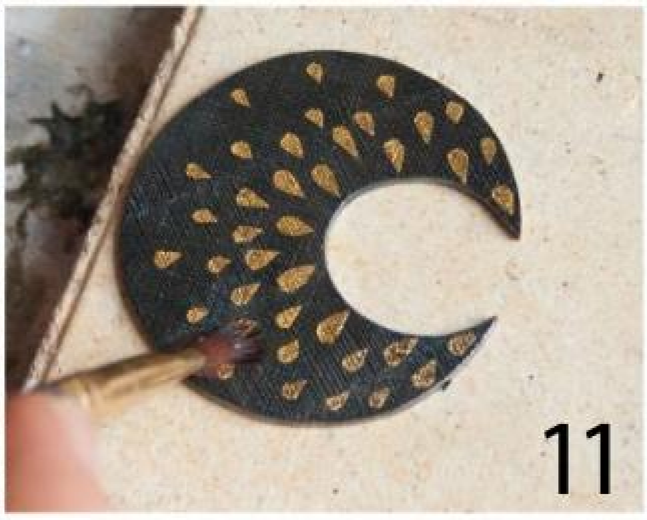






Process photos by Andrew Herold.





Foil and wire inlay

Prepare the foil. Use a craft knife, sharp scissors, or paper punch to cut shapes out of 24k gold or fine-silver foil.

NOTE: Keep the foil between the papers it comes in, and store it in a clean container where it won't get lost or bent.

Prepare the wire. Anneal a small coil of 30-gauge (0.26 mm) wire with a torch. Alternatively, set a sheet of scrap metal on a hot plate and set your wire on the sheet. Turn the temperature of the hot plate to high, and wait until the wire becomes limp and the shininess of the metal is gone. Let it cool completely. Use your fingers and pliers to form the wire as desired.

Lay out the foil and wire. Use small tweezers to carefully place the foil or wire on the chiseled surface of the steel, and lay the plastic over the steel **[8]**.

Attach the foil and wire. Use a small hammer, such as a riveting hammer, to lightly tap the foil or wire into the barbs of the chiseled steel **[9]**. Hammer carefully, and periodically check to see if it is attaching. Don't hammer too much or too hard, or the foil and wire will disintegrate.

Repeat until you have adhered all the elements of your design to the steel.

Planish the inlay. Use a planishing hammer with a mirror finish to lightly tap the entire surface of the steel. This helps lock the inlay in place.

NOTE: I chose not to do this because my foil was adhered well and I wanted to emphasize the steel's chiseled texture.

Finishing

Darken and seal your piece. When you have inlaid all the foil and/or wire, remove the piece from the plastic and place it on a screen on top of a soldering tripod. Use a bushy flame to slowly heat the piece from underneath until the steel turns black **[10]**.

NOTE: Don't overheat the foil, or it may melt and fuse to the surface, become invisible, or distort your design.

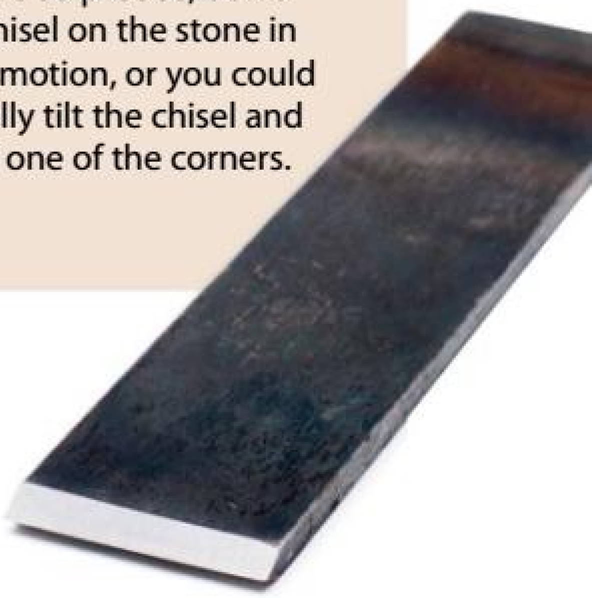
Let the piece air-cool until it's warm to the touch. Use a paintbrush to apply paste wax (such as Renaissance Wax) to the piece **[11]**, or allow the piece to cool completely and give the piece at least five light coats of a matte aerosol sealant.

NOTE: Use only cold-connection techniques to set your damascened steel into a piece of jewelry.

sharpen your chisel

As you create the chiseled cloth-like texture on your steel, you'll find that eventually the chisel no longer creates a sharp, hair's-width-thick cut. That means it's time to sharpen your chisel. You'll need to do this multiple times as you chisel the surface, so keep an eye on the cuts, and sharpen your chisel as needed.

- Apply a few drops of honing oil to a honing stone. The oil will soak into the stone (apply more oil as you work when the stone gets dry).
- Hold one side of the angled chisel tip flush on the stone, and push it slowly back and forth, maintaining the angle. Because the angle required for the chisel is so precise, don't rub the chisel on the stone in a circular motion, or you could accidentally tilt the chisel and round off one of the corners.



Hone your chisel (shown actual size) until the cutting end is less than a hair's-width thick.

It's easy to saw, file, and temper a specialty tool for a traditional metal inlay technique.

by Leia Zumbro

Make Your Own Custom Chisel

The specific chisel used for Poe-Mok Saang-Gum, the Korean style of damascene (see "Discover Korean Damascene," *page 32*), isn't commercially available, but luckily, it's easy to make your own. Using minimal tools and materials, create a chisel with a hair's-width-thick cutting edge and the angled tip that's necessary for this style of damascene.

Cut the steel. Use a jeweler's saw with a #1, 2, or 3 blade or a flex shaft with a cut-off wheel to cut a 4-in. (10.2 cm) length of ¾ x 1⁄16 in. (19 x 1.5 mm) 1% carbon tool steel. File the cut end until it's perfectly flat and perpendicular.

Mark and file the chisel. Set a pair of dividers to one-half the thickness of the stock (1⁄32 in./0.79 mm), and scribe the center line on the flat end of the steel **[1]**.

Set the dividers to ⅛ in. (3 mm) and use them to scribe a line across the width of the steel up from the marked end on both sides of the blank **[2]**.

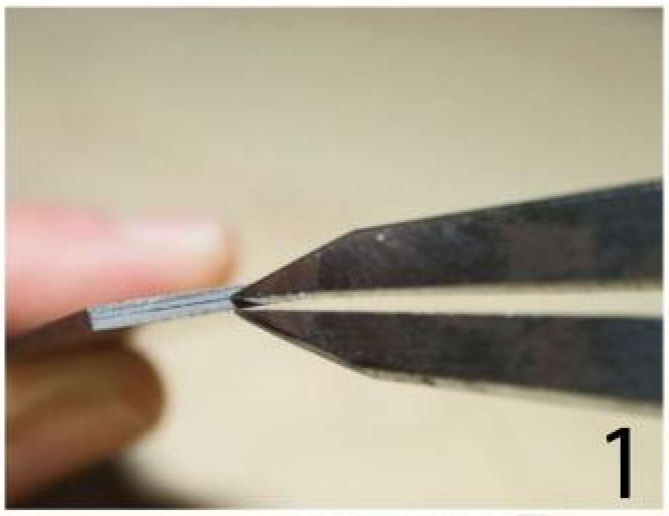
Use a C-clamp to secure the blank to the edge of a sturdy table. Use a bastard-cut hand file to file a taper from the ⅛-in. (3 mm) line to the centerline on the flat end of the stock **[3]**. Turn the blank over and repeat to file the other side of the stock. The tip of the chisel should be less than a hair's-width thick when you're done.

Harden the chisel. Fill a metal container (such as a coffee can) with motor oil. Hold the chisel near its flat end with a pair of heavy-duty chainnose pliers or vise grips. Heat the tip of the chisel until it glows red **[4]**. When the end of the chisel is evenly red, submerge it in the motor oil, and swirl it until the oil stops smoking **[5]**.

After the chisel is cool, remove it from the oil, and wipe away the excess oil with a soft cloth.

⚠ **SAFETY NOTE:** Don't remove your steel from the oil until it's cool, or you may spark a fire. Always work in a well-ventilated area, tie back long hair, and work on a fireproof surface.

Temper the chisel. Use progressively finer grits of abrasive paper (from 100 to 600 grit) to clean the oxides off of both sides of the steel from the tip to at least halfway up the chisel.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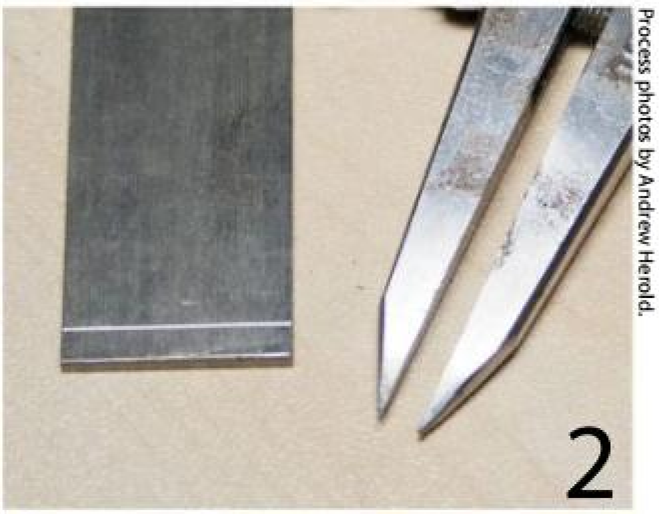
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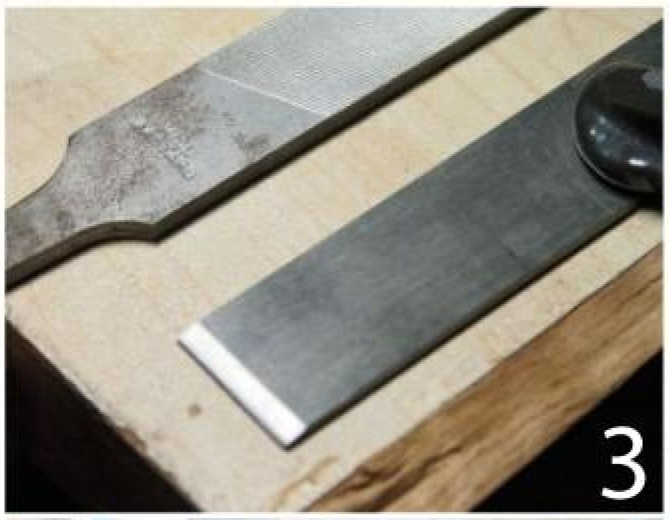
Process photos by Andrew Herold.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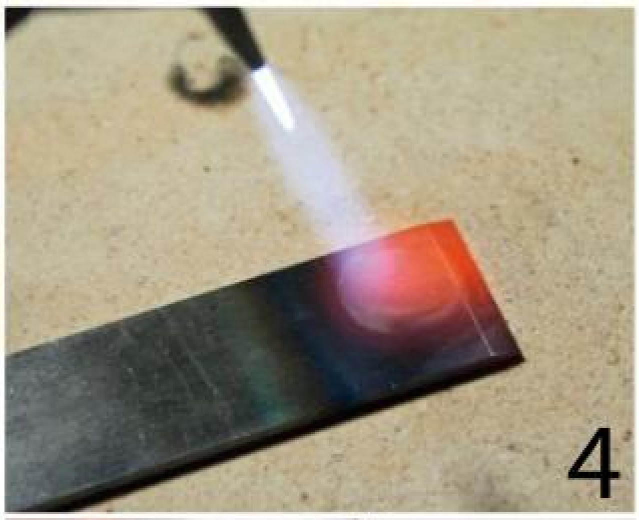
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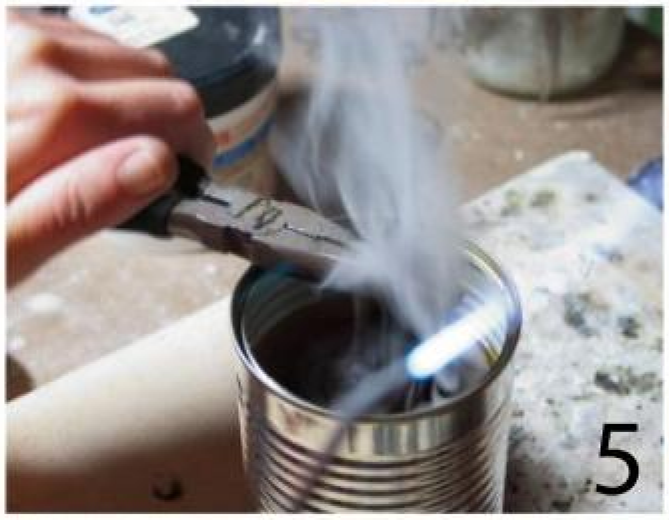
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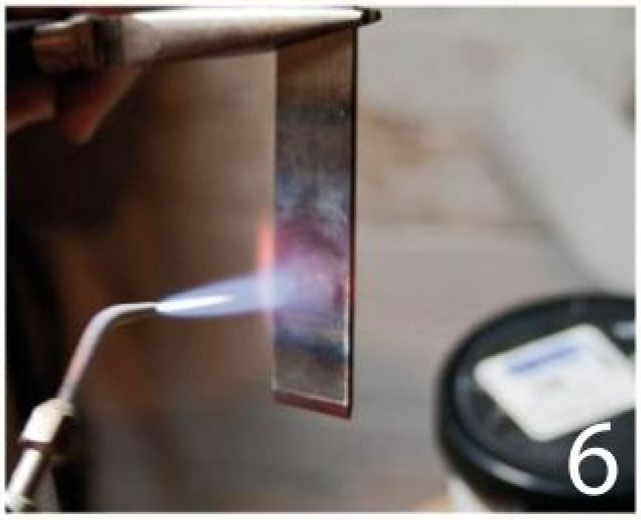
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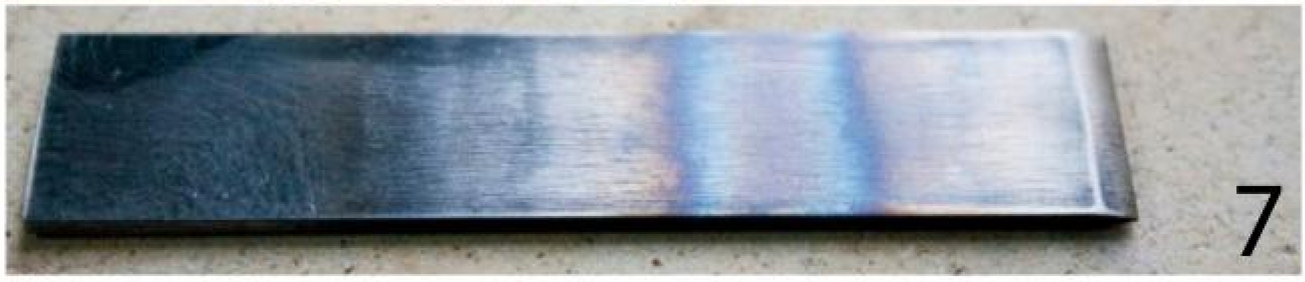
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NOTE: Removing the oxides allows you to see the color progression that will occur when you temper the chisel.

Hold the chisel as before. Hold the flame of your torch about 1 in. (25.5 mm) from the chisel tip, and begin slowly heating it **[6]**. A rainbow color progression will slowly move toward the tip of the chisel. When the tip is straw yellow, submerge the chisel in the oil and swirl the chisel until the oil stops smoking.

Wipe the chisel on the cloth to remove the oil, and check the color of the tip **[7]**. If you've overheated the chisel, and the tip is brown, blue, or gray, repeat to harden and temper it again.

Sharpen the chisel. Use a honing stone with oil to sharpen and refine the chisel tip (see "Sharpen Your Chisel," *page 35*). It must be sharp enough to lightly shave the surface of your fingernail when held at a low angle to the nail.

ONLINE EXTRA

Learn how to anneal, harden, and temper steel at **www.artjewelrymag.com/reference**.

materials

- 1% carbon tool steel, O1 (oil-quenching) or W1 (water-quenching), ¾ x 1⁄16 in. (19 x 1.5 mm); 4 in. (10.2 cm)

tools & supplies

- Jeweler's saw frame with a #1, 2, or 3 blade
- Flex shaft with a cut-off wheel (optional)
- Dividers
- C-clamp
- Bastard-cut hand file
- Motor oil in a metal container
- Heavy-duty chainnose pliers or vise grips
- Torch, fireproof surface, and striker
- Soft cloth
- Abrasive paper, 100–600 grit
- Honing stone with oil

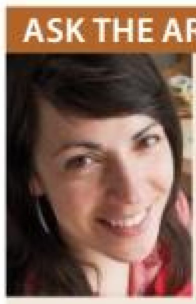
Find out where to buy supplies, *page 79*
See Safety Basics, *page 75*

BASICS & VIDEOS

Learn fundamental techniques in these bonus tutorials:	B	🎥
Basic sawing of metal	●	●
Sanding	●	
Using a honing stone		●

B Basics, *page 73*
🎥 Videos, www.artjewelrymag.com/videos

ASK THE ARTIST: LEIA ZUMBRO



What's your favorite local source of inspiration?

"I love going to the local farmers' market. All the shapes and colors that change with the seasons, along with all the different people with every imaginable style and type of adornment inspire me. It's the sense of self sufficiency within the local community — coming together, growing and selling their own food, and making things the way they want. This is what I really identify with as a jewelry maker."
Contact: www.leiazumbro.com

Bell Charm

by Marthe Roberts/Shea

Making a bell charm is not as hard as it may seem. With a few basic forming, soldering, and finishing techniques, you'll be able to make jewelry "with bells on."

Try using different textures and metals for added effects and colors. You can make your bell frilly or keep it plain. You can play with the bell's acoustics, too. The smaller the size of the ball that you use inside the bell, the higher the pitch of the jingle will be. Thinner gauge metal can affect the tone, as well.

BASICS & VIDEOS

Learn fundamental techniques in these bonus tutorials:	**B**	🎥
Dapping	●	●
How to file		●
Sanding	●	
Drilling through metal	●	●
Piercing metal	●	●
Making balls with fine silver scrap metal		●
Sweat soldering	●	

B **Basics, *page 73***
🎥 **Videos, www.artjewelrymag.com/videos**

materials

- Metal sheet: 22–24-gauge (0.6–0.5 mm)
- Scrap wire: Sterling or fine silver (amount determined by design)
- Jump ring: 14–16-gauge (1.6–1.3 mm), 6–10 mm outer diameter (OD)

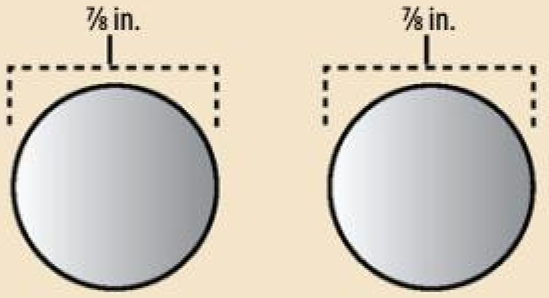
toolboxes, *page 76*

- Sawing/piercing
- Soldering/annealing

additional tools & supplies

- Disk cutter
- Circle template
- Scribe
- Dapping block and punches
- Drill press (optional)
- Polishing papers (optional)
- Finishing wheels for flex shaft (optional)
- Patina (optional)

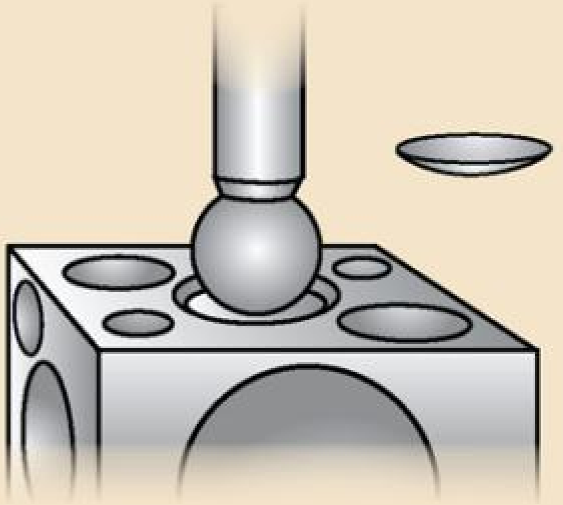
Find out where to buy supplies, *page 79*
See Safety Basics, *page 75*



PART 1: DOMES

1 Use a disk cutter or a jeweler's saw with a 4/0 blade to cut two identical circles out of 22–24 gauge (0.6–0.5 mm) metal sheet. (My circles are sterling silver, and are ⅞ in. [22 mm] in diameter.) Use a circle template to find the midpoint of each circle, and mark it with a scribe.

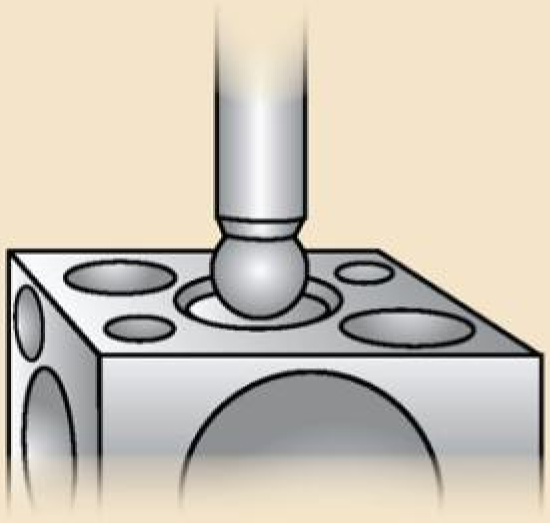
Anneal the metal, then quench, pickle, and rinse.



2 Place one circle in a depression of a dapping block that is slightly larger in diameter than the circle. Use the corresponding-size dapping punch to form the circle into a shallow dome.

Repeat to dome the second circle.

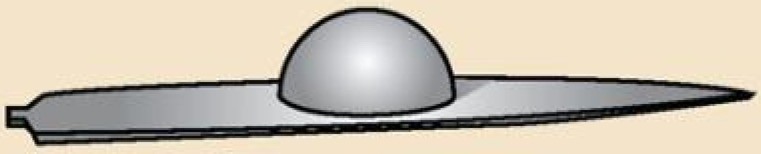
NOTE: Form the circles concurrently to keep the dome sizes uniform.



3 Place one metal dome back into the same depression you used in Step 2, and use the next-size-smaller dapping punch to further form the dome. Repeat for the second dome.

Place the first dome into the next-smaller depression in the dapping block. Use the corresponding-size punch for the depression as before, then move to the next-smaller punch to form each dome.

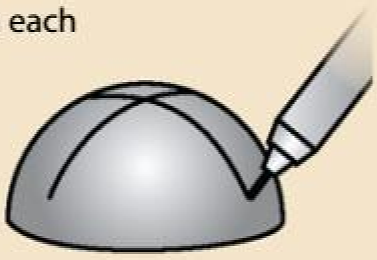
Continue to form the domes in progressively smaller depressions until the edge of each dome is flush with the surface of the dapping block.



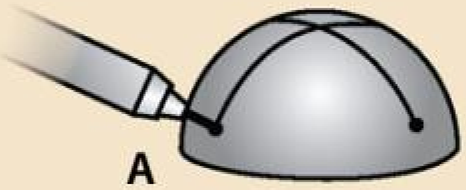
4 Use a fine-cut flat hand file to refine the edge of one dome so that it is flat and even. Place a sheet of 220-grit sandpaper on a flat surface and run the edge of the dome over the sandpaper in a figure-8 motion to further refine and smooth the edge. Repeat to flatten and refine the second dome.

Hold the domes together with the edges touching, so the two domes form a ball. Check the join where the two domes meet to ensure they fit flush with no gaps. If they do not, further refine the edges until they do.

Set one dome aside.



5 Use a scribe or fine-tip marker to draw an X at the midpoint that you marked in Step 1, with each leg extending from the midpoint to approximately ⅛ in. (3 mm) from the bottom edge of the dome.



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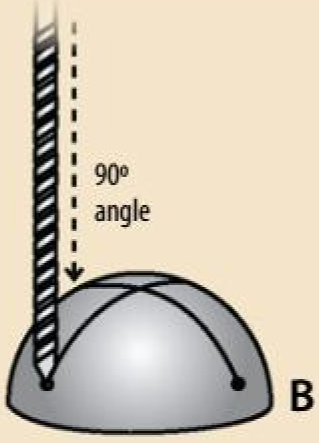


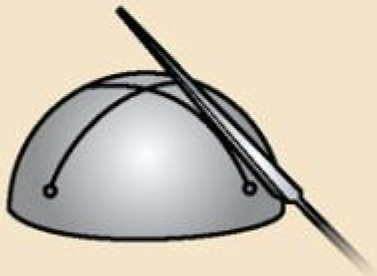
B

6 Use a scribe to make a deep divot at the end of each leg of the X **[A]**. This will give the drill bit a place to be seated.

Use a #78 (0.016 in./0.41 mm) drill bit in a flex shaft or drill press to drill a hole through the first divot. Hold the flex shaft in your dominant hand, perpendicular to your work surface. Hold the dome firmly with your other hand. Set the tip of the drill bit into one of the scribed divots and drill straight down **[B]**.

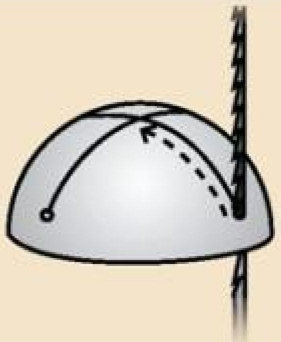
Repeat to drill holes through the other divots. Insert a larger drill bit (I used a #59 [0.041-in./1.04 mm] drill bit) into your flex shaft. Hold the flex shaft and dome as before, and use the larger drill bit to enlarge the holes.

TIP: Drilling a smaller pilot hole in your metal will help avoid the problems inherent in using a large drill bit to drill through metal.



7 Use one edge of a triangle needle file to score along the length of the legs of the X. Repeat a few times to deepen the scored line, creating a shallow channel in the dome's surface.

TIP: Filing a shallow channel along the line of your design makes it easier to saw a precise line on a formed surface.

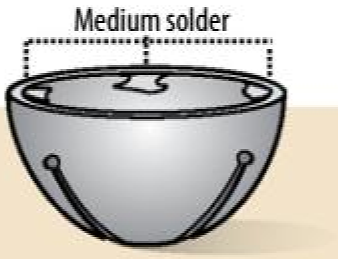


8 Tighten the top of a #2 saw blade in a jeweler's saw frame. Thread the bottom of the blade through one of the drilled holes in the dome, then tighten the bottom of the blade in the frame. Saw along your filed line from the drilled hole to the peak of the dome. Remove the saw blade from the metal.

NOTE: Do not saw across the dome to the opposite hole. The saw blade will be harder to control, making the cut uneven.

Repeat to saw from the other holes to the peak of the dome.

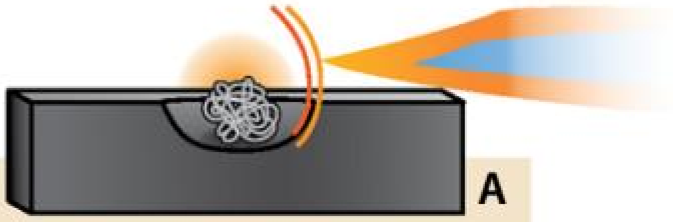
PART 2: ASSEMBLY

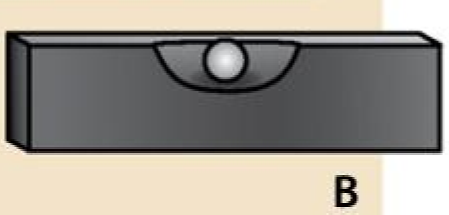


9 Set the sawn dome peak-side down on a charcoal block or firebrick. Apply flux to the dome's rim, and place four evenly spaced pallions of medium solder on the rim.

NOTE: If you are using sterling silver sheet, you may wish to flux the entire metal surface to prevent firescale.

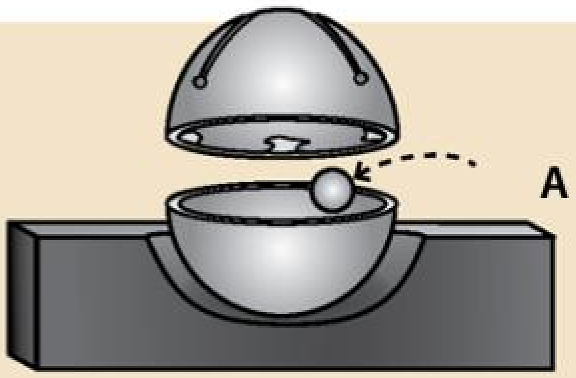
Use a torch with a medium flame to slowly heat the dome and melt the solder pallions. Quench, pickle, and rinse the dome.



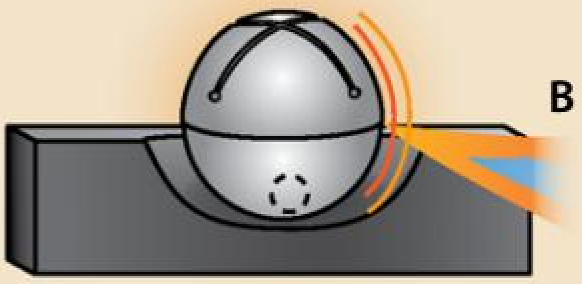


10 Carve a small, round depression in your charcoal block or firebrick **[A]**. Set a small piece of scrap sterling or fine silver wire in the depression. Melt the wire to form a ball that is about ⅛ in. (3 mm) in diameter in the depression **[B]**. Allow the ball to cool. Coat the ball with an anti-flux and let it dry.

NOTE: Carving a depression in your soldering surface ensures that your ball will be perfectly round. If your soldering surface is flat, your ball will be flat on the bottom.

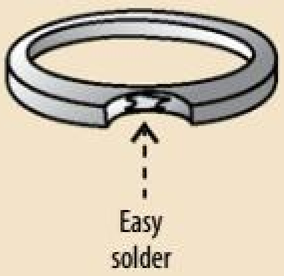


11 Carve another depression in your charcoal block or firebrick large enough to support one of the metal domes. Set the plain dome peak-side down in the depression. Make sure the edge is parallel to your work surface. Flux the rim and the outside of the dome. Place the silver ball inside the dome **[A]**. Set the sawn dome on top of the plain dome so the edges sit flush and the two domes form a ball.



Use a reducing flame to heat the assembly in a circular motion **[B]**. Occasionally concentrate the flame on the seam until you see the solder start to flow. Then, use the flame to draw the solder around the seam.

Quench, pickle, and rinse the assembly. Set it aside.

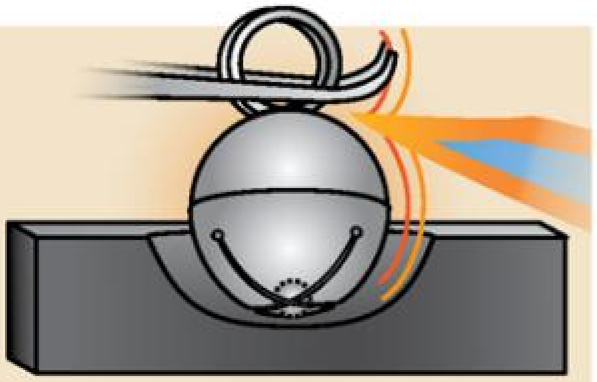


12 Purchase or make a 14–16-gauge (1.6–1.3 mm) jump ring with an outer diameter (OD) of 6–10 mm. The gauge of metal and the size of the ring should be proportional to the bell assembly. (I made a 10 mm OD jump ring from 14-gauge [1.6 mm] sterling silver square wire.)

Use a half-round needle file to file a U into the outside of the ring. Try to match the contour of the bell assembly's dome. If you need the U to be wider, use a larger half-round file.

NOTE: You can solder the ring closed with easy solder before filing, as I did, or you can file the U at the join, so that you don't need to solder the ring closed beforehand.

Once the U fits flush to the contour of the bell assembly's dome, flux the ring, and melt a small pallion of easy solder on the curve of the U.



13 Flux the bell assembly, and line the seam with some anti-flux. Place the bell assembly into the divot, with the sawn side down and the seam parallel to your work surface. Use a scribe to make a small mark at the top of the bell assembly where the jump ring will sit.

Flux the jump ring, and hold it with a pair of cross-locking tweezers. Do not set the jump ring against the bell assembly yet.

Light your torch, and use a circular motion to gently heat the bell assembly. When the flux becomes glassy, set the jump ring against the bell assembly at the scribed mark with the U against the dome. Do not press down too hard. Focus the heat near the join until the solder flows.

Quench the assembly and remove the anti-flux if necessary. Pickle, rinse, and thoroughly dry the assembly. Use a half-round needle or escapement file to remove any excess solder, then use progressively finer grits of polishing papers by hand or finishing wheels in your flex shaft to smooth and refine the bell's surface.

If you wish, patinate your bell using the patina of your choice. AJ

Marthe Roberts/Shea's work has been shown in galleries nationally and has appeared in Art Jewelry*'s Gallery. She teaches jewelry making at the Cheltenham Center for the Arts (Cheltenham, Pa.), the Delaware Art Museum (Wilmington, Del.), and the Main Line Art Center (Haverford, Pa.). She is also the president of the Pennsylvania Society of Goldsmiths. You can reach her via her website, www.jewelrybymars.com.*

GALLERY

True art is characterized by an irrestible urge in the creative artist.

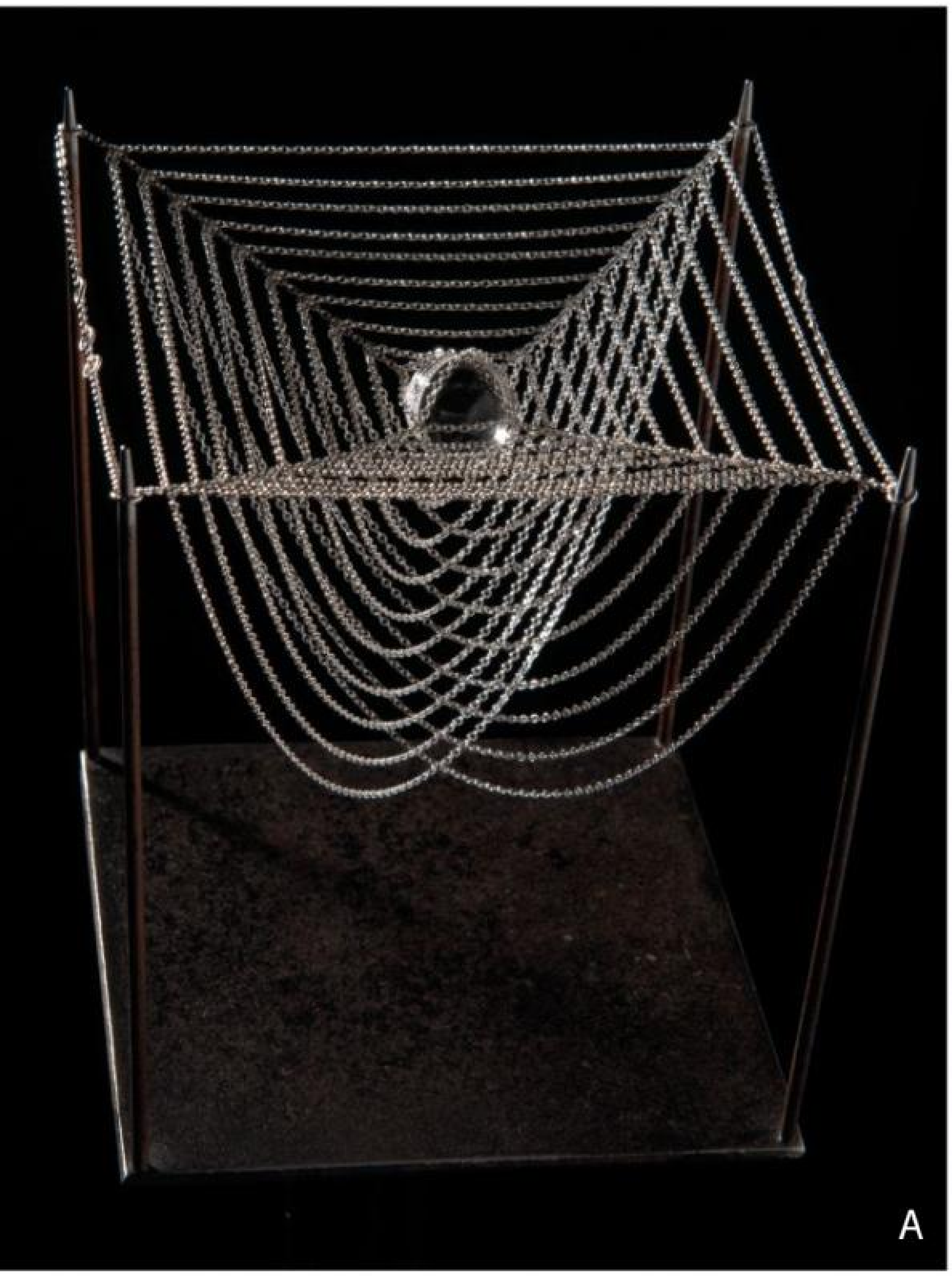
—Albert Einstein

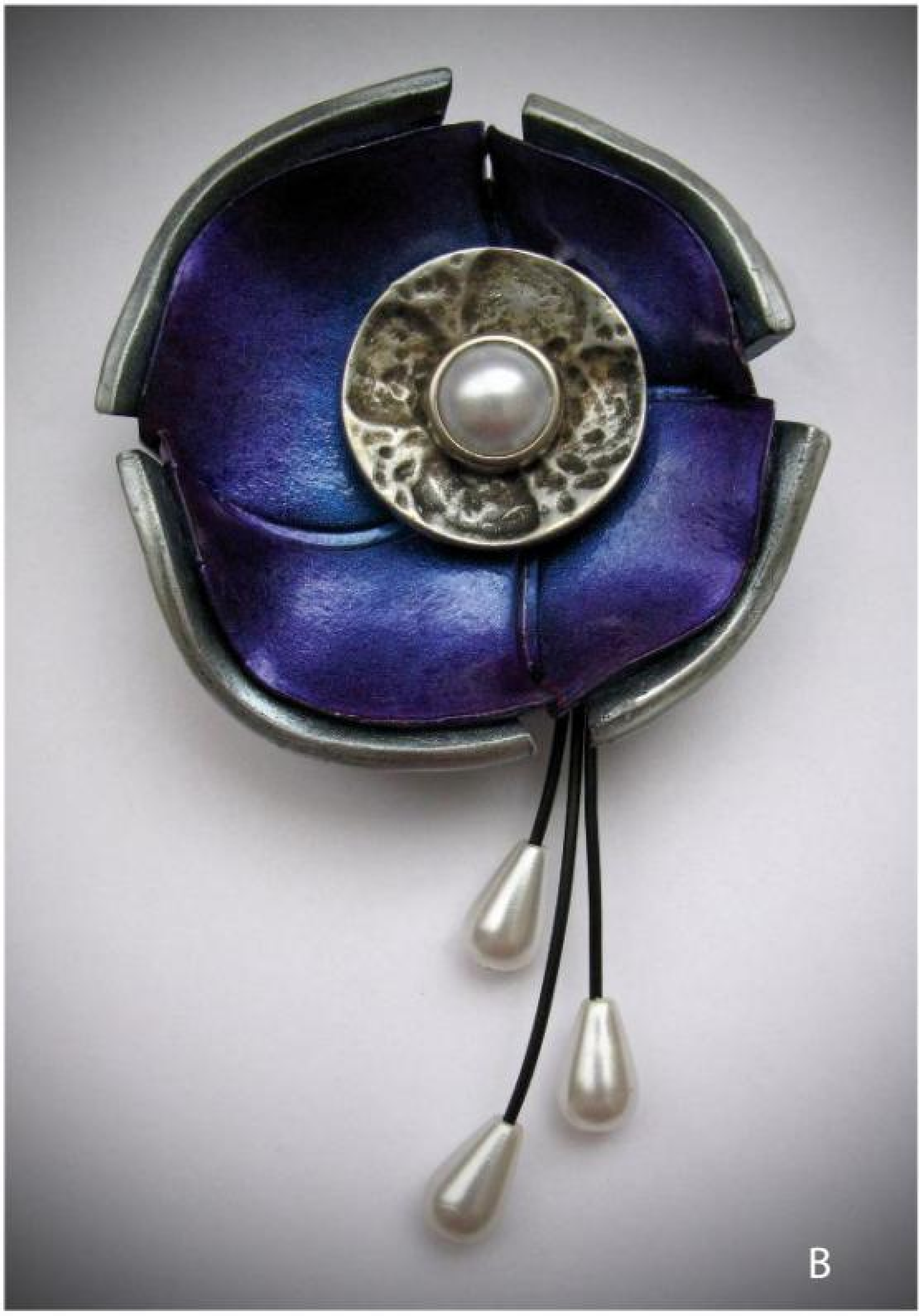
[Page 41] Paging through a botanical book, **Patricia Tschetter** was enchanted by the structure of a leaf that she later discovered was wolfsbane. Once called "queen of poisions," it was believed to ward off werewolves. Tschetter used silver, 22k gold, and blue/green tourmaline to make her *Wolfsbane* brooch. Photo by Marilyn O'Hara.

[A] Lucie Heskett-Brem and three other artists began the "4 in 1 art group" (www.4in1art.com) to encourage each other to explore chain mail through their own medium. Heskett-Brem's sterling silver *Pyramid* necklace transforms into a delicate sculpture with the help of a stand by metal artist Ned Egen. Others in her group work in clay, glass, and textiles. 4 x 4 x 4 in. (10.2 x 10.2 x 10.2 cm).

[B] The concept for *Moonflower in Purple* started when **Helen Breil** began contemplating how to transform an asymmerical line drawing of flowers into a 3D form. Polymer clay, buttons, a steel washer, acrylic paint, buttons, rubber cording and beads compose the brooch, which is approximately 5 cm (2 in.) in diameter.

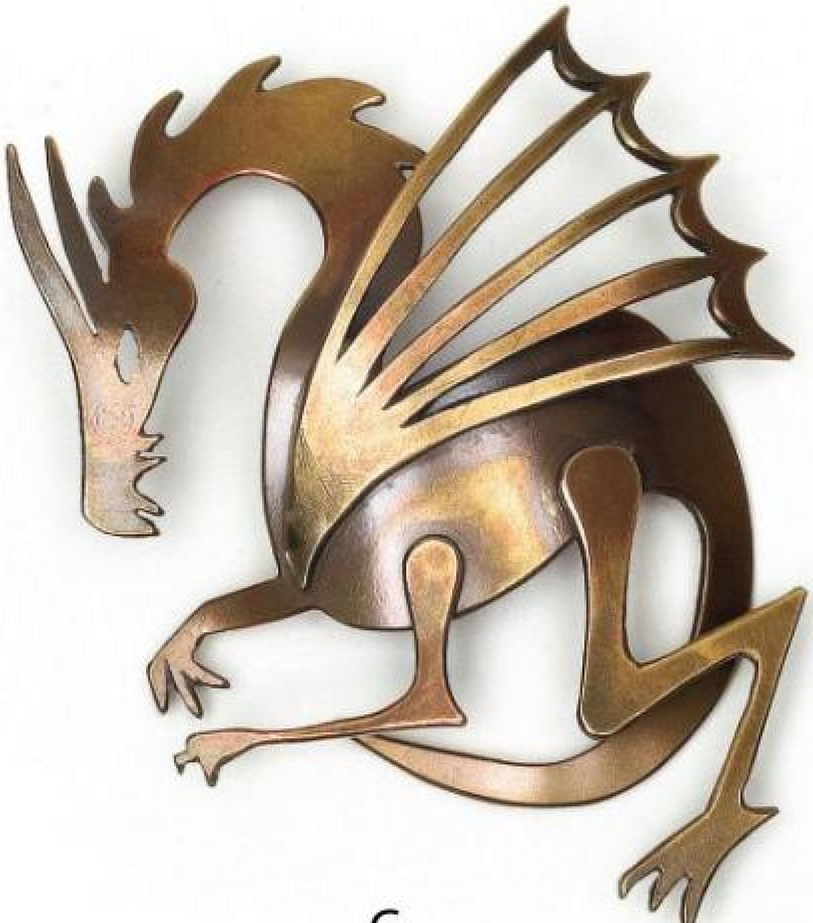
[C] Some legends say that wearing a dragon imbues the wearer with the qualities of a dragon and protects from misfortune. **Nina Raizel** distilled





dragon mythology and their symbolic qualities of strength, luck, wisdom, and nobility down to a 2 x 1½ in. (51 x 38 mm) brass adornment, and dubbed it the *Noble Dragon Necklace*.

[D] Combining traditional forms with the aesthetics of modern sculpture, **Hiromi Suter** created her pendant of Argentium and traditional sterling silver and 14k gold. 30 x 58 x 15 mm (1³⁄₁₆ x 2¼ x ¹⁹⁄₃₂ in.).



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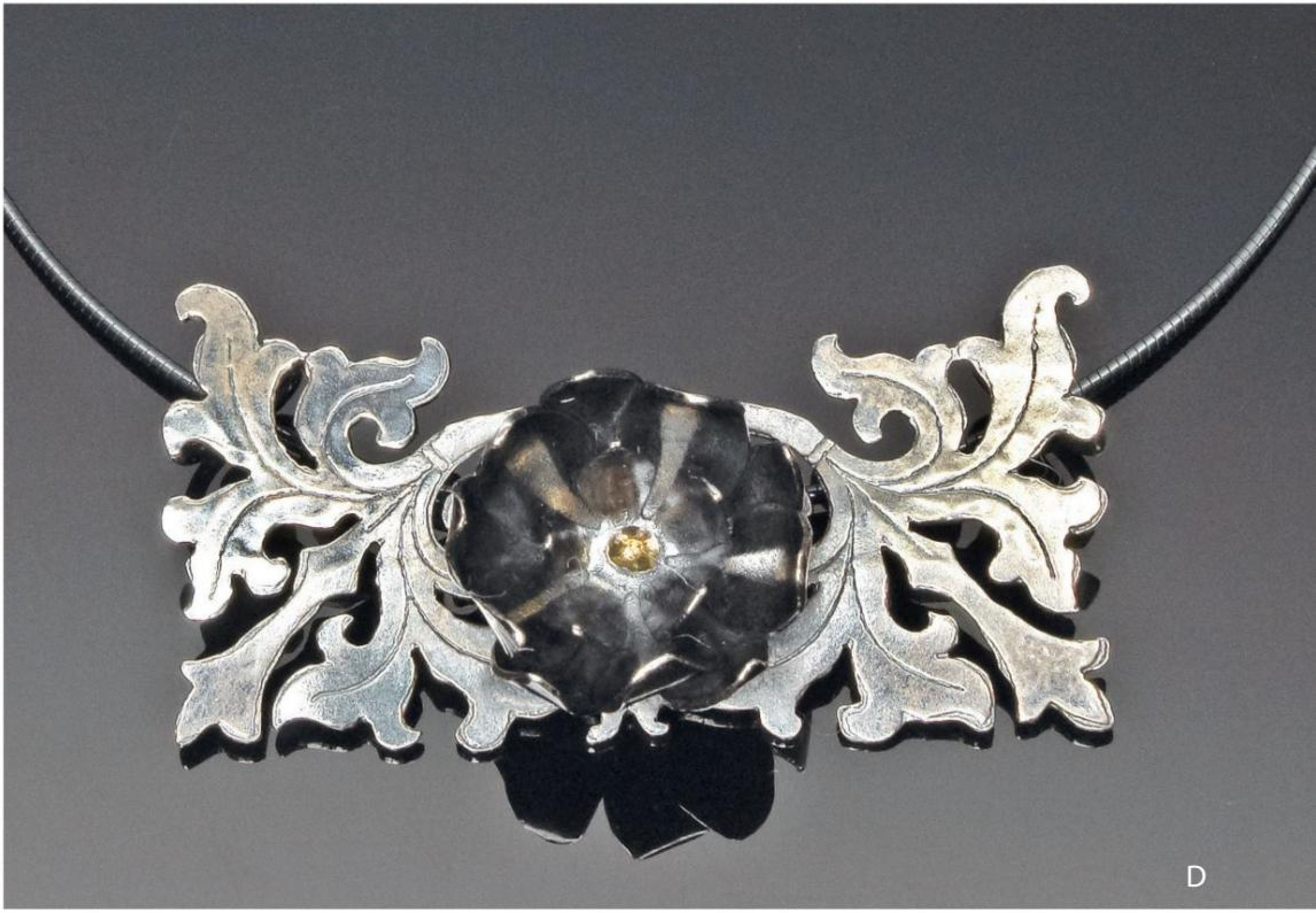


D

***To contact the featured artists, see Contacts,* page 79.**

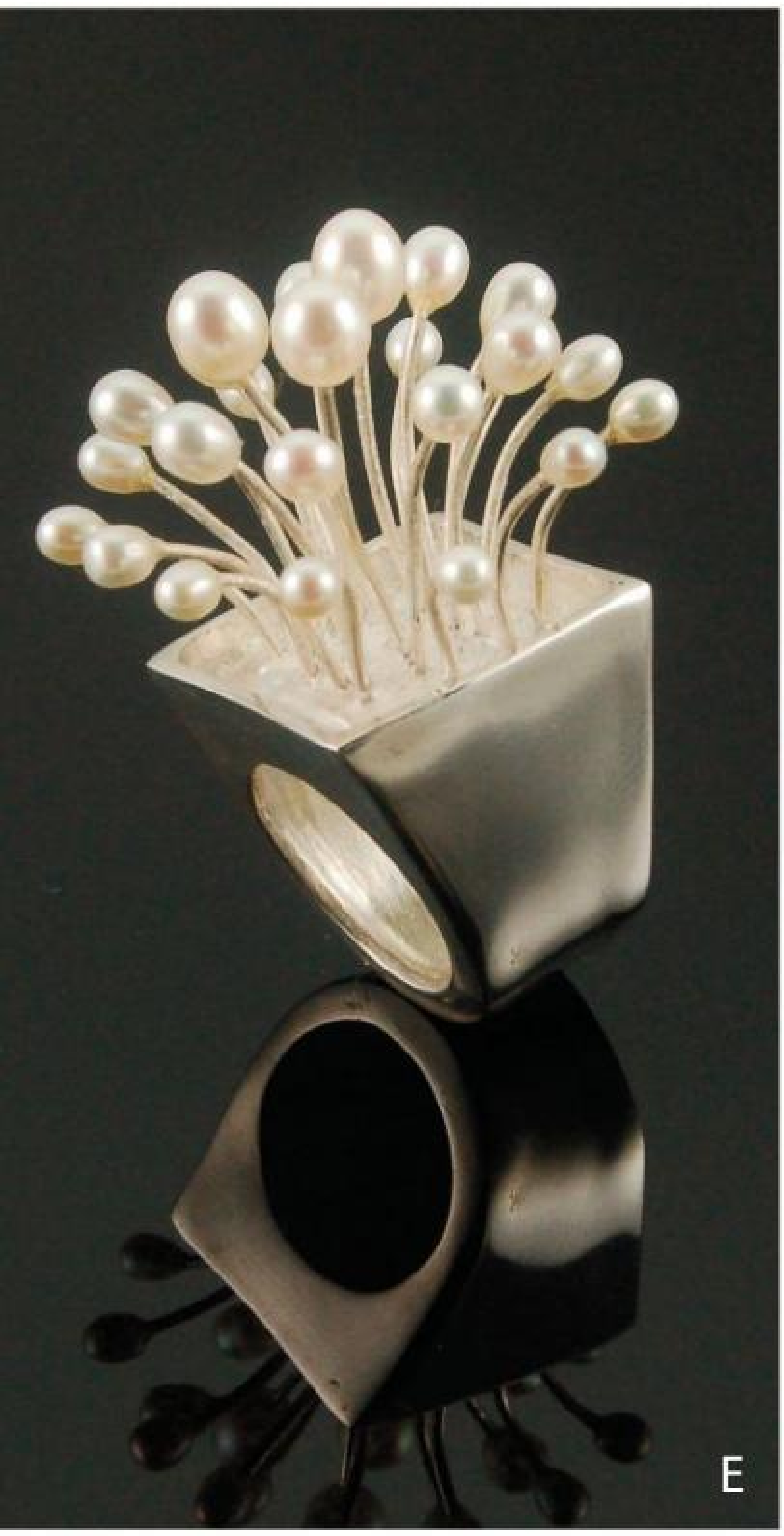
[E] Pam East wanted to capture a dramatic moment, frozen in time. By attaching pearls to silver wire, she made them seem to leap out of the hollowform fine silver metal clay ring. Inspired by the playful finished effect, she named the ring *Exuberance*.

[F] Cheryl Eve Acosta's "Hidden in Nature" collection showcases the fragility of sea life. *Ericius'* copper-and-enamel structure mimics the spiny skeleton of a sea urchin, and chimes softly with the wearer's movement. 12 x 10 x 5½ in. (30.5 x 25.4 x 14 cm).

[G] The carnelian, garnet, peridot, amethyst, and Swiss blue topaz that **Boline Strand** used for her *Beach Flower Earrings* recall the delicate flowers she finds growing along beaches she visits. 22k gold bimetal and sterling silver complete the earrings. 1$\frac{3}{16}$ x ⅜ in. (30 x 9.5 mm).

[H] Celie Fago made her first lentil bead over a decade ago; since then, she has pierced, prodded, sagged, stretched, interrupted, and reversed the form. She made this pendant from sterling silver metal clay. 1⅞ x 2⅞ in. (48 x 73 mm). Photo by Robert Diamante.

[I] When **Marcy Swanson** came across an old "&7" typewriter key, she was immediately reminded of the beginning of the Gettysburg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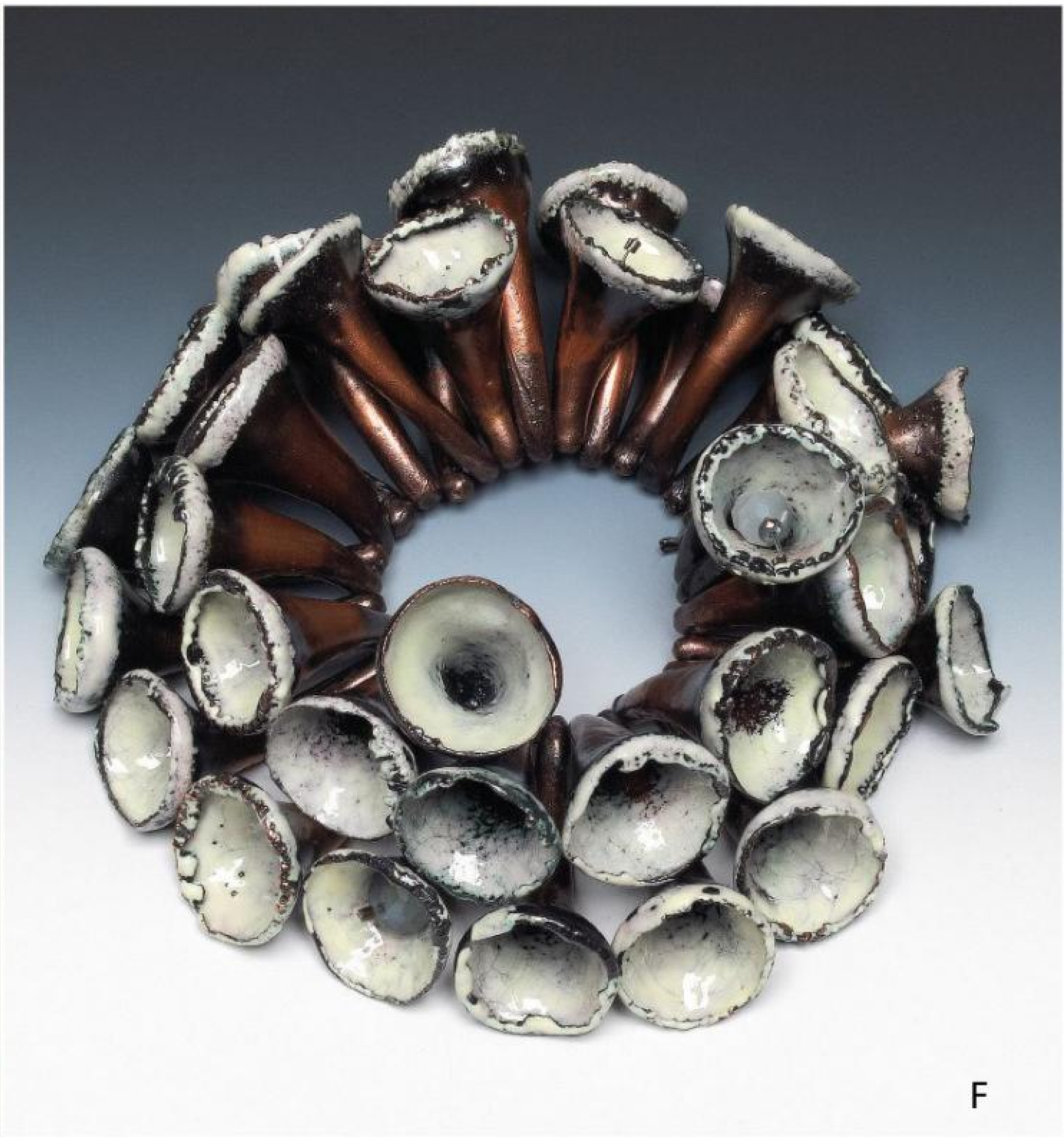
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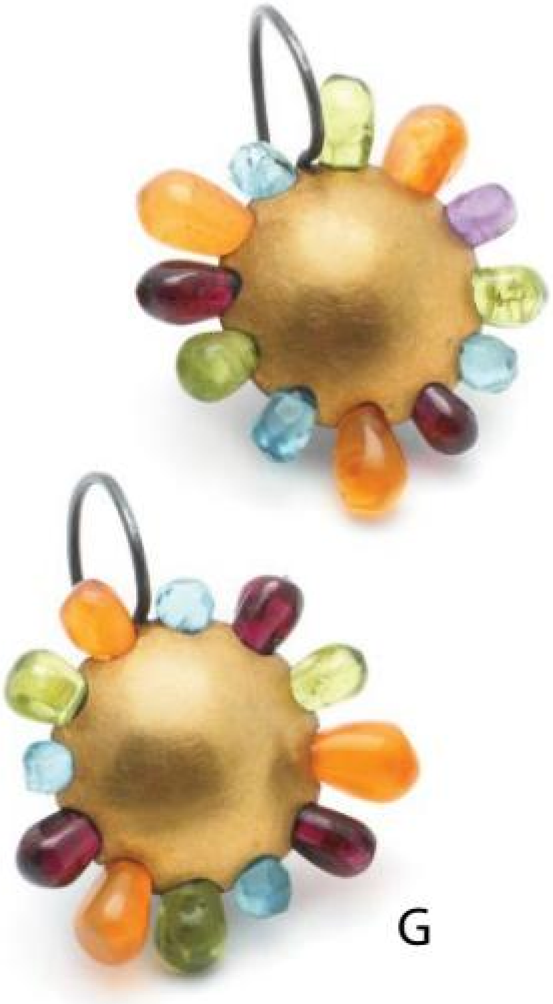
address, "Four score and seven years ago…" She made her *Lincoln Pin* of copper, bronze, and found objects. 3 x 2½ x ⅜ in. (76 x 64 x 9.5 mm).

Photo by Gerrit Kelly.

[J] Geological pressures and condensed cityscapes are reflected in the compact placement of **Tova Lund**'s small box forms. She made her *Artificial Outcropping* ring by cold connecting tin and sterling silver.



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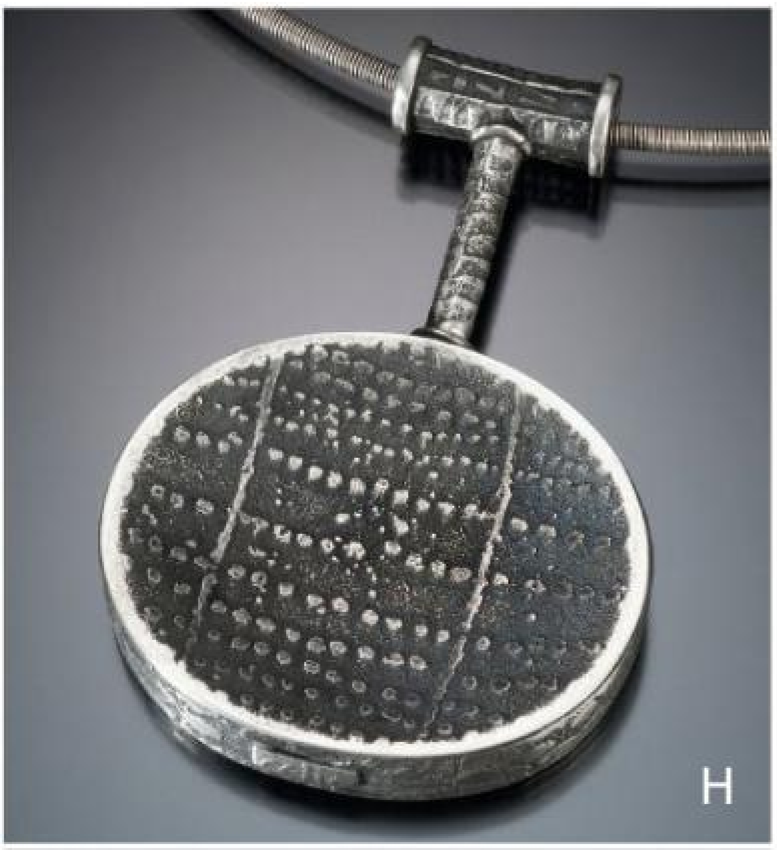
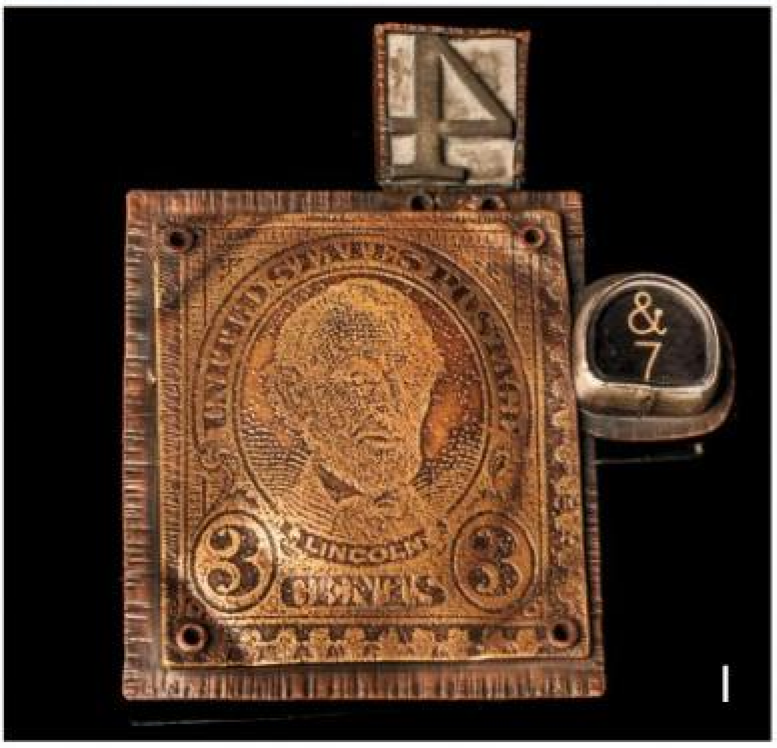
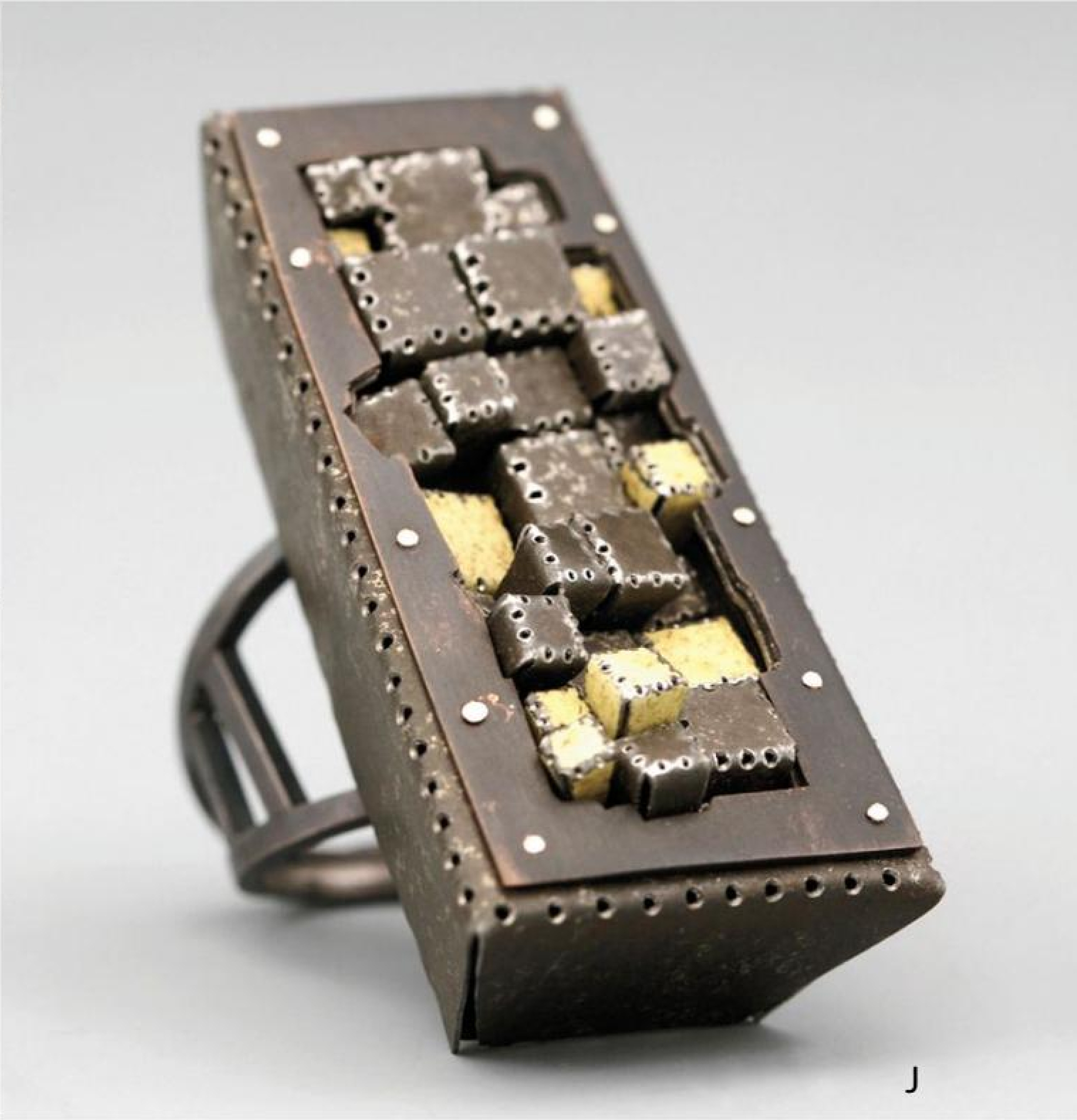
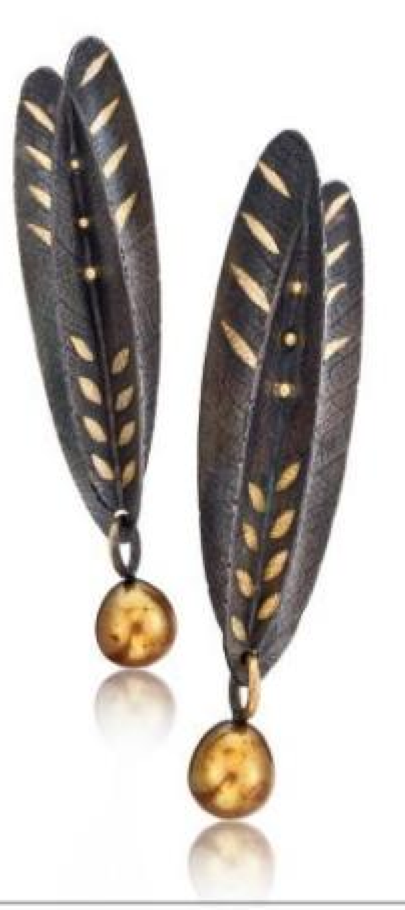






***To contact the featured artists, see Contacts,* page 79.**

A conversation with CHRISTINE MACKELLAR



> “I never made pieces with just one color of metal, ever. One of my tutors used to call me ‘That tartan metal girl,’ because everything had a pattern on it.”

What’s the appeal of mixing up metals?
It’s just the way I look at the world. When I draw something, there is going to be a shaded area and a lighter area, and when I transfer that into a design, that ends up being a different-colored material. When you look, nothing appears to us as one color or tone. Using one color feels artificial for me.

What are some of your favorite ways to get texture on metal?
Of late, I’ve been interested in roller texturing because I can make expanses of metal and play with them. I’ve explored texture in a lot of different ways. At the moment, it’s more that all of a piece has a single texture and I use the dimensions of the piece as an extra layer of texture. Previously, I did pieces with flatter, layered planes, but each plane had an individual texture or fused pattern.

You don’t use many stones, but the ones you do are unusual.
I love stones and own a lot of stones, but they most often turn out to be a source of inspiration for a piece. I have a habit of designing a piece around a stone and then editing the stone out! Using maquettes, I spend a lot of time manipulating and adjusting scale and proportion. Frequently a piece becomes too complex and then I have to put it aside until I can see it with a fresh eye, which can be years.

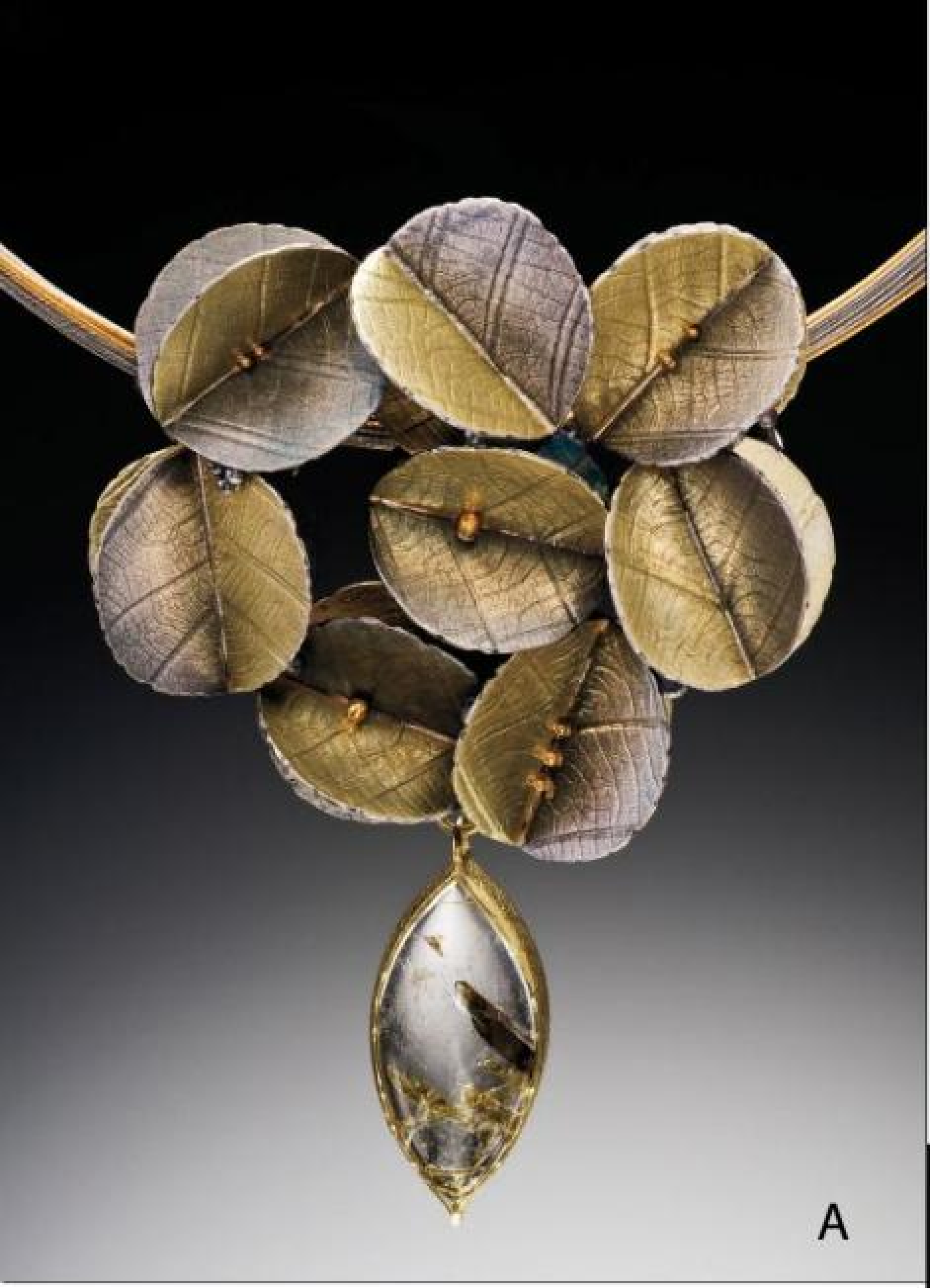
You use the term “collection” pieces rather than “production.” What do you see as the difference between those two terms?
They are production pieces, but I make each piece one at a time, and they relate to each other. I’ll have a design that I repeat, but it’s still going to be individually made so the texture’s going to be slightly different. There are always choices that are made in each piece even if it’s a production piece. I used to be more hung up on, ‘It’s got to be precisely what it was the first time I decided it was right.’ My work has its own character now and I’m comfortable with the depth of that character. It can be right many times and have the character of the piece without being precisely the same thing.

Where I come from informs everything in my work. I grew up on a farm, and I saw how things are just a little bit different every year. It depends on the weather, how much water, how much sun. The world isn’t fixed. I used to want to fix it, and now I don’t!

What do you hope the end user sees in your pieces?
Whenever I try to design a piece by focusing on a person or a type of person, I feel like I miss miss the point totally. It is easy to spend time worrying about who the viewer is, and what I think they want, when I obviously don’t know them well. But it is a necessary collaboration. Jewelry isn’t really successful until it’s at home with somebody. It should enhance their personality; make them feel good; help them feel confident and happy in the world. My part is to use the tools I have gathered over the years to produce a robust, distinctive piece for them to imbue with their own dreams.

It took me a while. At first I thought of it as kind of frivolous, and merely decorative. But over time I have witnessed the importance that jewelry carries with it. I realized that it is frivolous, and decorative, and a whole lot more. Visit a museum, and what are often on exhibit are burial goods; the things that carry emotional weight and importance to an individual, their family, and the culture that made them. And so often what went along wherever they thought they were going was their jewelry. AJ

[Top] *Feather Leaf* earrings. Sterling silver, 18k gold, freshwater pearls. 2 in. (51 mm) long. [A] *Bold Blossom #1* pendant. 18k gold/sterling bimetal, 18k gold, included quartz. 2¾ in. (70 mm) long. [B] *Garland* necklace. Sterling silver, 18k gold, rutilated quartz. 17 in. (43.2 cm) long; 1¼ in. (32 mm) at widest point. [C] *Autumn Blossom* pendant. 18k gold, sterling silver, moonstone, diamond. 2¾ in. (70 mm) long. Photo by Cole Rodger. **[D] *Twig* bracelets. Sterling silver, 18k gold, diamonds. [E] *Bold Blossom #4* pin/pendant. 18k gold/sterling bimetal, 18k gold, included quartz. 2¼ in. (57 mm) long.** All photos by Hap Sakwa unless otherwise noted.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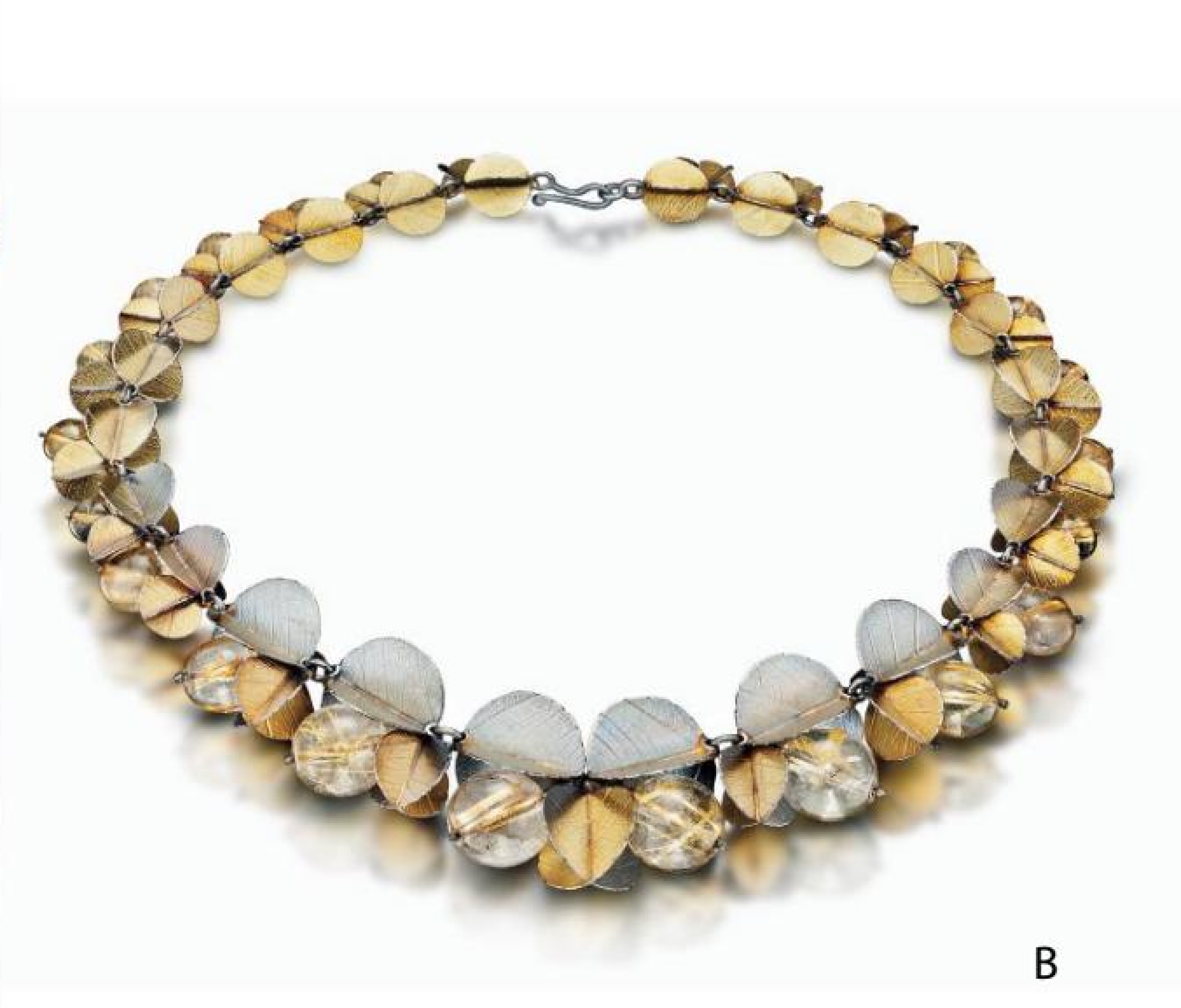
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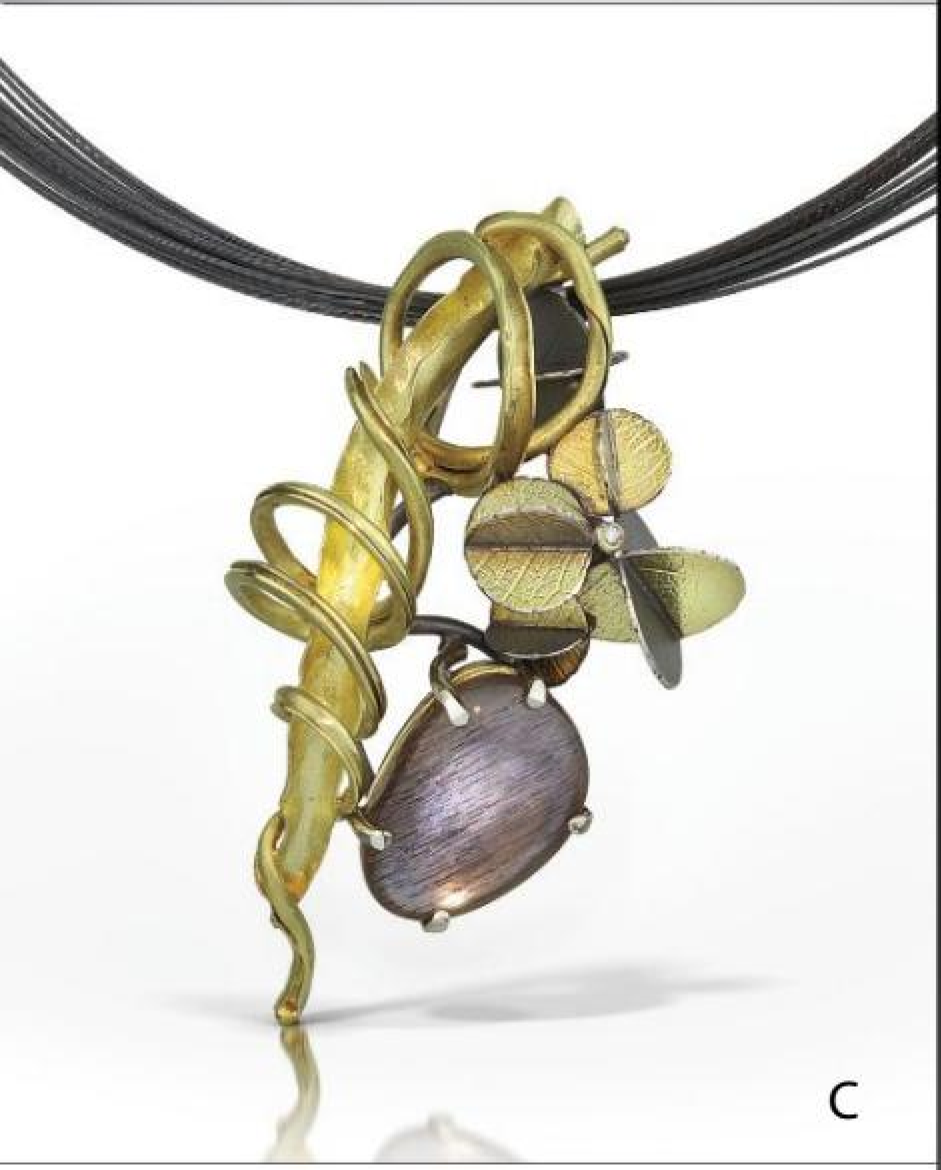
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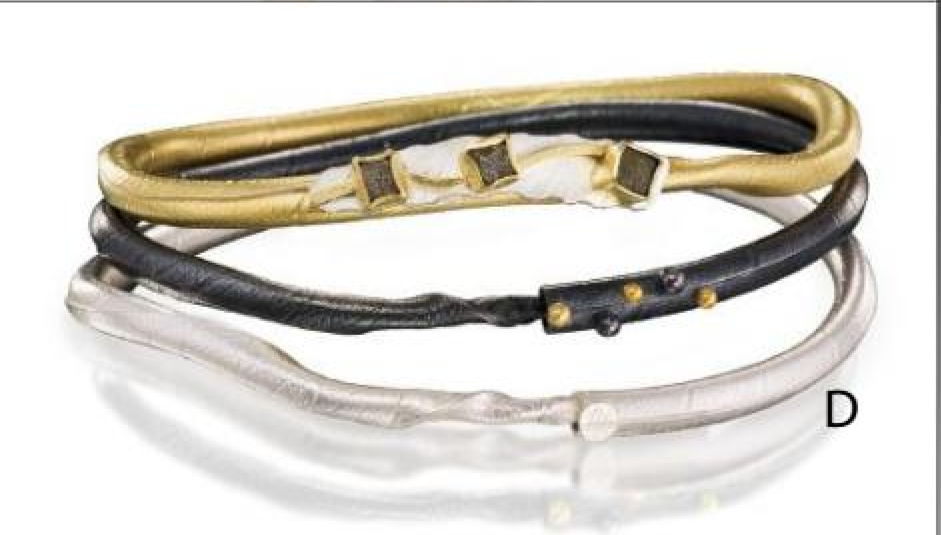
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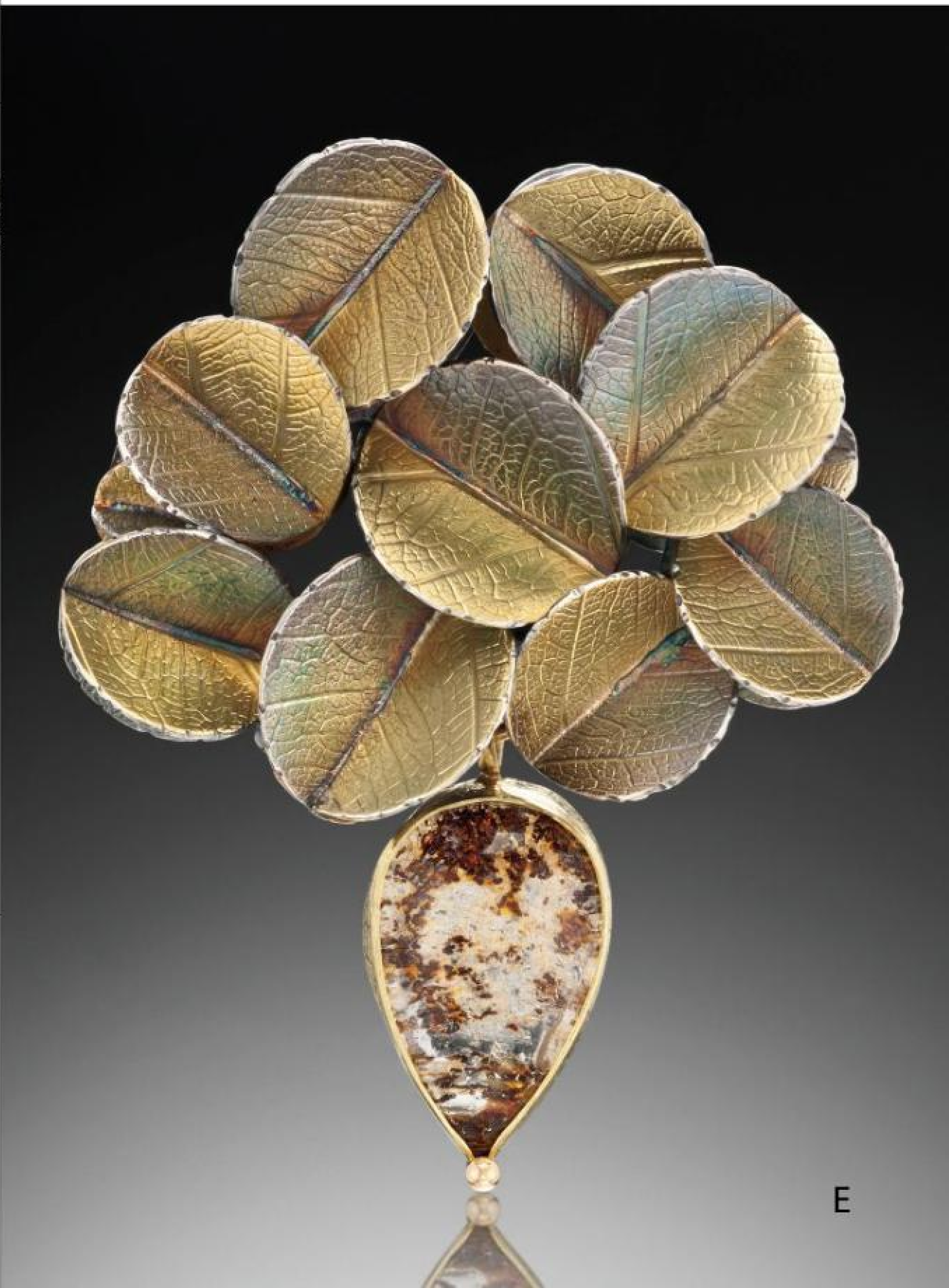
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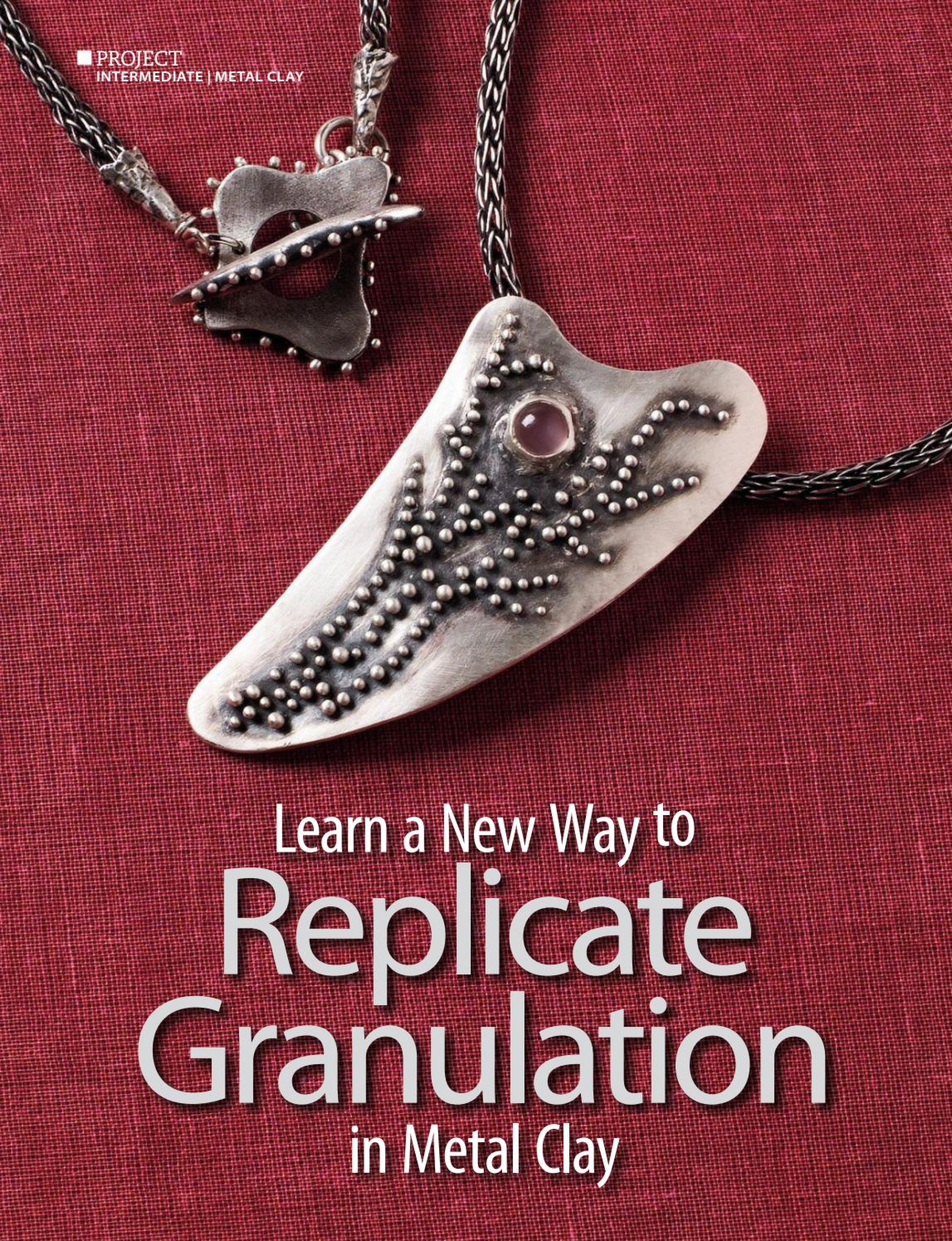
PROJECT
INTERMEDIATE | METAL CLAY



Learn a New Way to Replicate Granulation in Metal Clay

Avoid the fussiness of traditional granulation and the messiness of metal clay imitations by using the properties of metal clay to your advantage.

by Marian Ward

Granulation is an ancient technique of fusing granules (or small spheres) of precious metal to a sheet of the same metal to form a design or pattern. This technique is difficult to master, because both the metal sheet and the granules need to reach the fusing temperature at the exact same time to successfully fuse. You can imitate the look of granulation with metal clay by dipping fine-silver granules in metal clay slip and pasting them in place on the surface of unfired metal clay, but this fails to achieve the clean, crisp look of traditional granulation. Wanting to achieve the look of granulation with the ease of metal clay, I devised a new process to avoid the limitations of both.

Instead of using tiny spheres, I form small, fine-silver balled-up wire "pins" that I then insert into drilled holes in unfired metal clay. When fired, the metal clay shrinks around the pin stems, holding them in place. This way, I achieve a precise design with no melting, no misalignment, and no messy slip puddles.

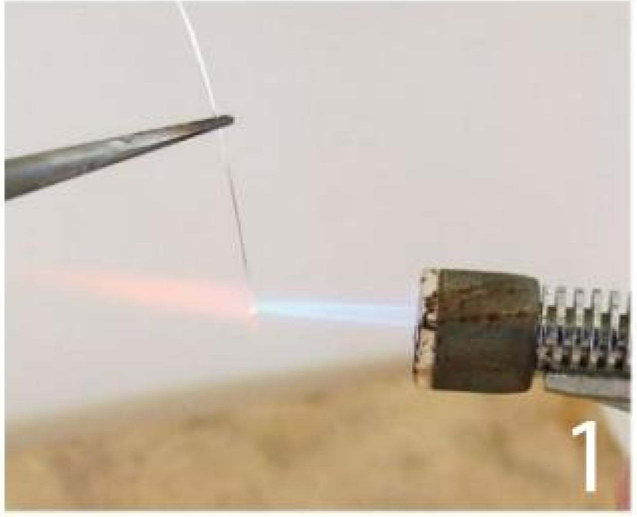
Make the pins. Cut a 6-in. (15.2 cm) piece of 24-gauge (0.5 mm) fine-silver wire. Straighten the wire by running it through your fingertips or nylon-jaw pliers. Hold the wire vertically in cross-locking tweezers so roughly 1½ in. (38 mm) of wire extends below the tweezers. Point the tip of the flame of a handheld butane torch just above the end of your wire **[1]**. Once a small ball forms on the end of the wire, remove the flame, and quench the ball.

NOTE: The longer you hold the flame on the wire, the larger the ball will be. Practice will allow you to make consistent sizes.

Use wire cutters to trim the wire approximately ¼ in. (6.5 mm) from the ball. Then, repeat the process to ball up the new wire end. Remember to keep at least 1½ in. (38 mm) of wire below the tweezers. You should be able to make about 24 pins from a 6-in. (15.2 cm) piece of wire.

Metal Clay Dryness

Wet	A lot of moisture; very pliable
Semi-dry	Some moisture; firm, holds its shape
Mostly dry	Nearly devoid of moisture; rigid
Completely dry	No moisture; can be fired



1

materials

- Fine-silver wire: 24-gauge (0.5 mm), round, any temper, 39 in. (1 m)
- Fine-silver metal clay, 25 g
- 8 mm moonstone or other translucent cabochon
- Fine-silver bezel wire, ⅛ in. (3 mm) wide: 1¼ in. (32 mm)

toolboxes, *page 76*

- Soldering/annealing
- Metal clay
- Finishing

additional tools & supplies

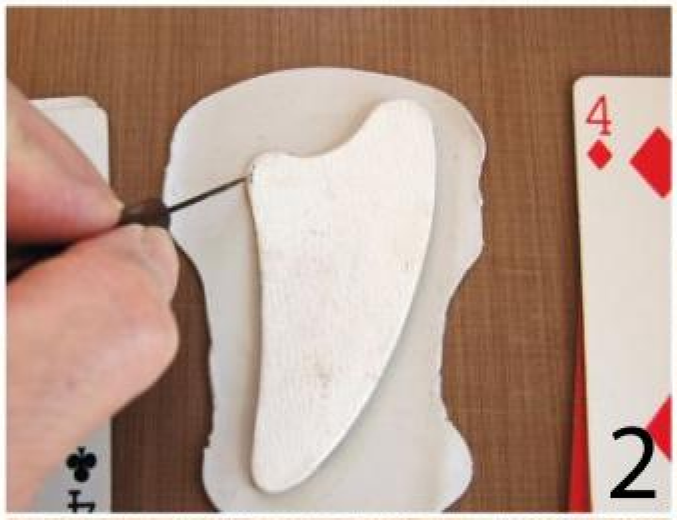
- Nylon-jaw pliers (optional)
- Small containers, 3
- Pin vise
- #78 (0.016 in./0.46 mm) drill bit
- Grinding wheel attachment for flex shaft
- Bezel pusher
- Burnisher

Find out where to buy supplies, *page 79*
See Safety Basics, *page 75*

BASICS & VIDEOS

Learn fundamental techniques in these bonus tutorials:	B	🎥
Balling the end of wire	●	●
Rolling and cutting metal clay	●	●
Drying metal clay	●	
Making metal clay paste	●	●
Using a tumbler to polish metal clay	●	●
Liver of sulfur patina	●	●
Setting a cabochon in a bezel (parts 1–3)		●

B Basics, *page 73*
🎥 Videos, www.artjewelrymag.com/videos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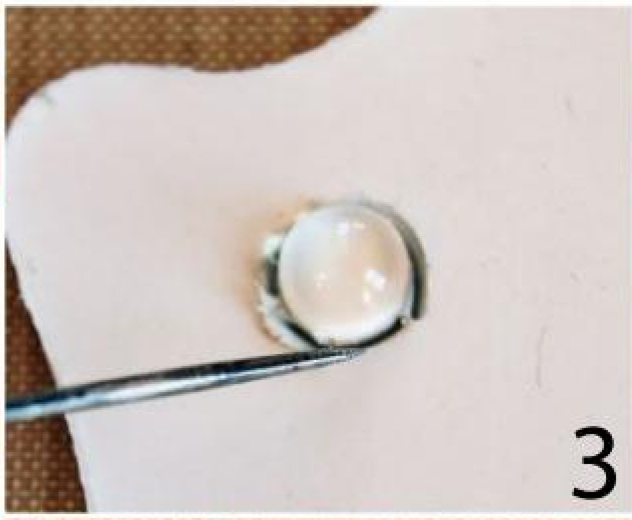
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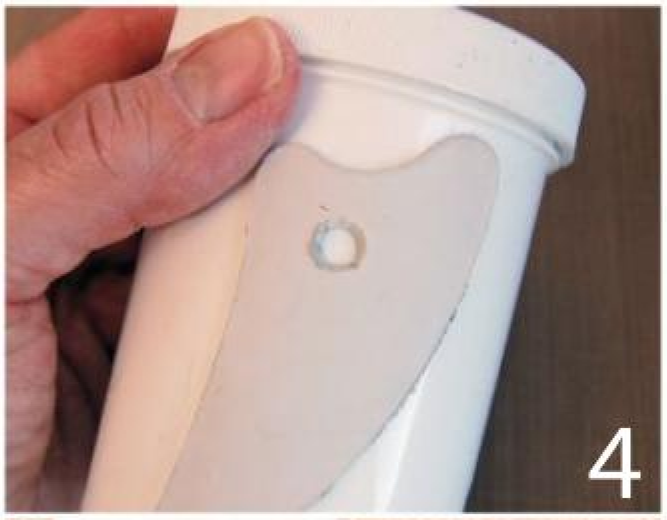
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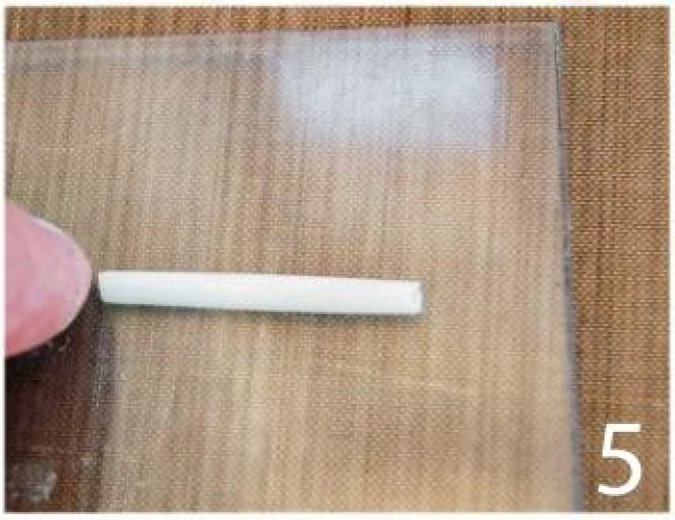
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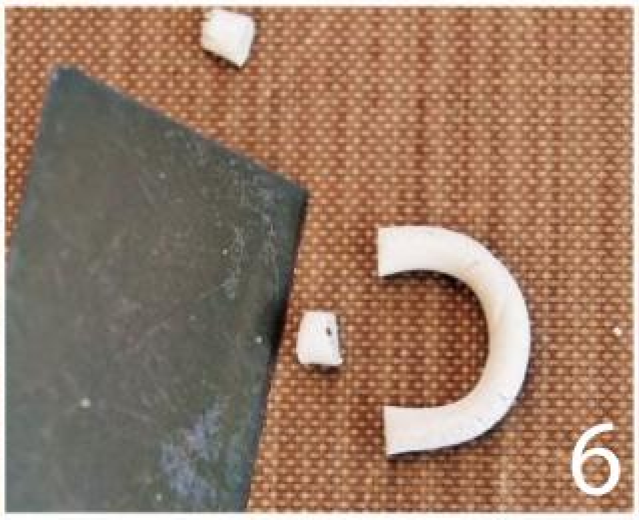
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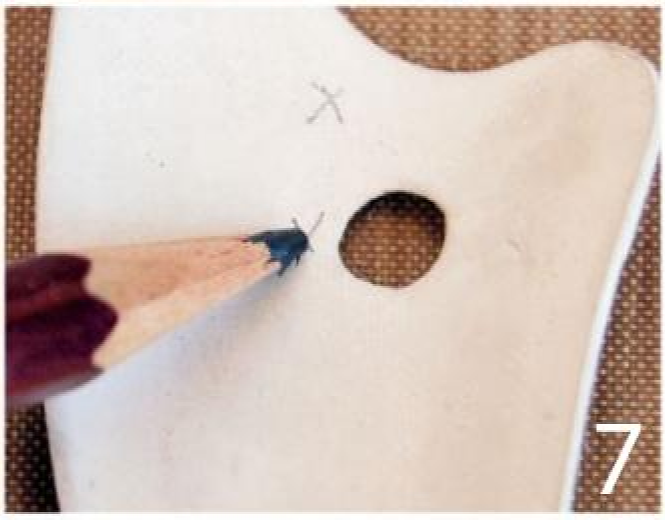
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NOTE: As you work, sort your pins by ball size so that you have a variety for use in your design. I use three small cups — one each for small, medium, and large pins.

Cut more wire, and repeat to make about 150 pins in total.

Make the metal clay base. Lightly oil a roller and your work surface. Roll out 25 g of fine-silver metal clay to four cards thick. Set a shape template on your clay, and use a needle tool to cut the clay around the template **[2]**. Use a circle template or your cabochon as a guide to cut a circle out of the clay shape **[3]**. Remove the excess clay.

NOTE: This hole will allow light to shine through a translucent cabochon. You'll set the stone after a second firing.

Lightly coat a jar or cylinder with olive oil. Drape the metal clay shape over the jar and allow it to dry completely **[4]**. (See "Metal Clay Dryness" chart, *page 49*.)

NOTE: For this technique to work, the ends of the pins must poke through the back of the clay shape. To accommodate the ends, the base needs to be curved or domed. If the base is flat, the ends of the pins will keep the balled-up ends from lying flush on the surface of the base.

Make the bail. Lightly oil a coil roller, and use it to roll a pea-sized ball of metal clay into a 1-in. (25.5 mm) snake **[5]**.

TIP: A strip of clear plastic works well as a coil roller for metal or polymer clay. The clear surface allows you to see the clay as it forms the shape you want. You can make one from an old CD case.

Form the snake into a C shape and use a tissue blade to cut both ends flat. Allow the snake to dry completely **[6]**.

Finish the base. Use progressively finer grits (from 320 to 600) of sanding paper to smooth and remove any imperfections from the metal clay base.

NOTE: It is difficult to sand around the pins after firing, so any refinement of the base should be done at this stage.

Use sanding papers or files to smooth the ends of the bail. Make sure they are flat and even.

Draw your design. Use a pencil to draw a design on the front of the base. Mark the back of the base where you'll attach the bail **[7]**. Make sure your design does not interfere with this placement.

NOTE: Make sure your design is at least ⅛ in. (3 mm) from the edge — if you drill too close to the edge of the dried metal clay, you could chip or crack your piece.

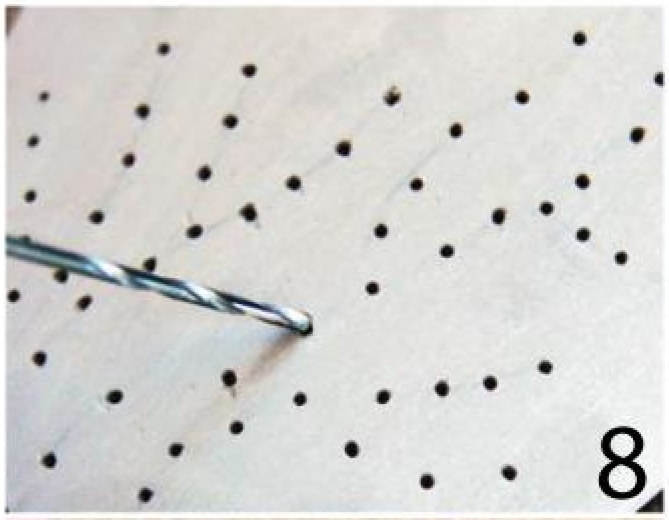
Drill the holes. Use a pin vise with a #78 (0.016 in./0.46 mm) drill bit to drill holes along the lines of your drawing **[8]**. The holes should be at least 1⁄16 in. (1.5 mm) apart to accommodate the clay's shrinkage. Work slowly and carefully to avoid cracking the clay.

NOTE: Each wire must fit snugly in its hole. If you use a different gauge of wire than called for in this project, use calipers to measure the wire and then use a drill bit that is the same size or slightly smaller to ensure that the holes and the wire match.

Assemble and fire the pendant. Apply metal clay slip to the two ends of your bail, and place it on the back of the base where you made marks **[9]**. Allow the slip to dry completely, then use needle files to remove any excess slip from the join.

Turn the base front-side up. Use a pair of tweezers to pick up a pin and place it into a hole in the design. Repeat to set pins in the remaining holes **[10]**.

Set the pendant on a kiln shelf and fire it according the metal clay manufacturer's instructions. Allow it to air-cool.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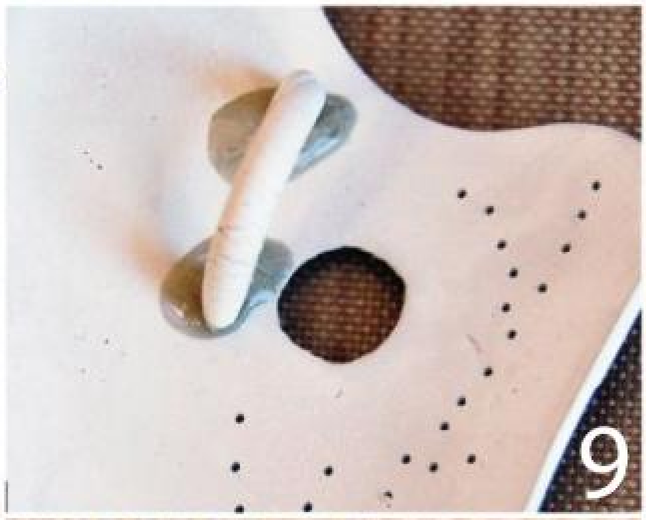
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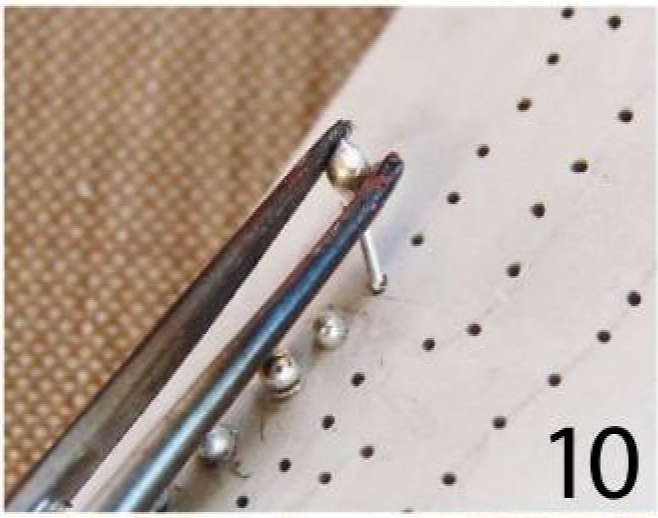
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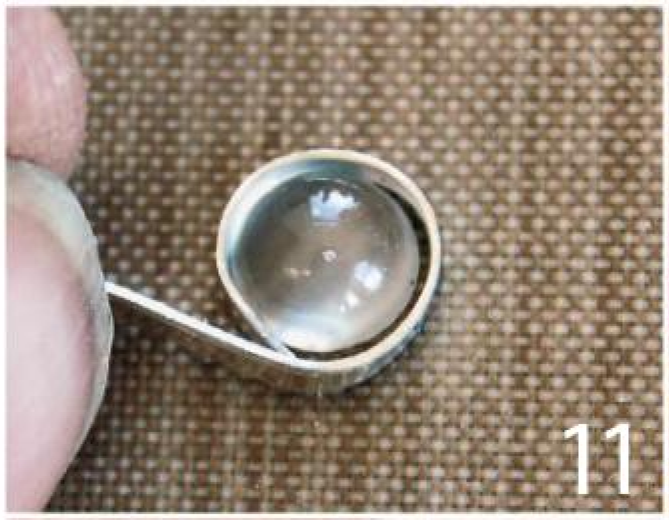
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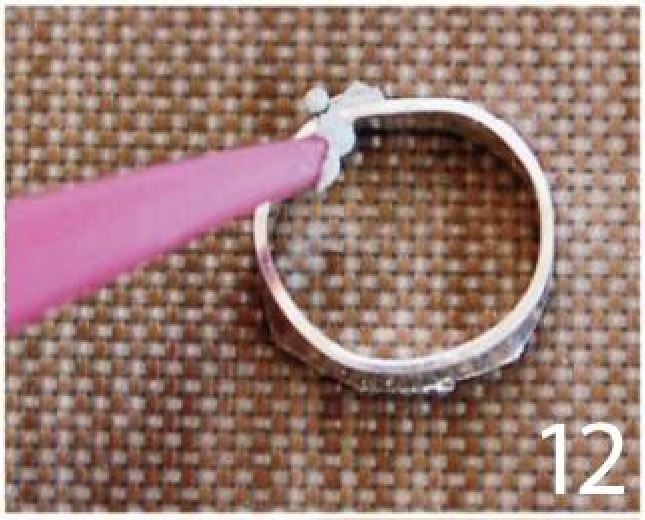
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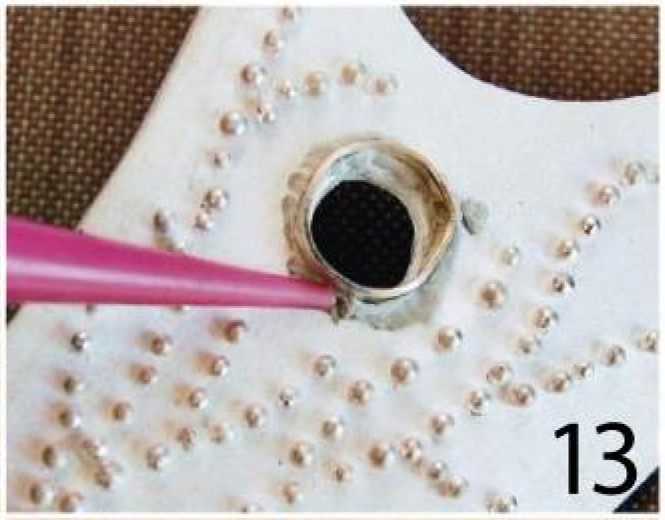
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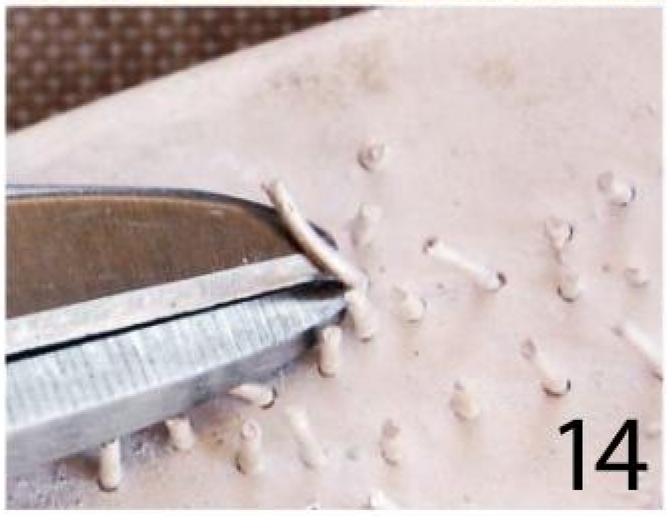
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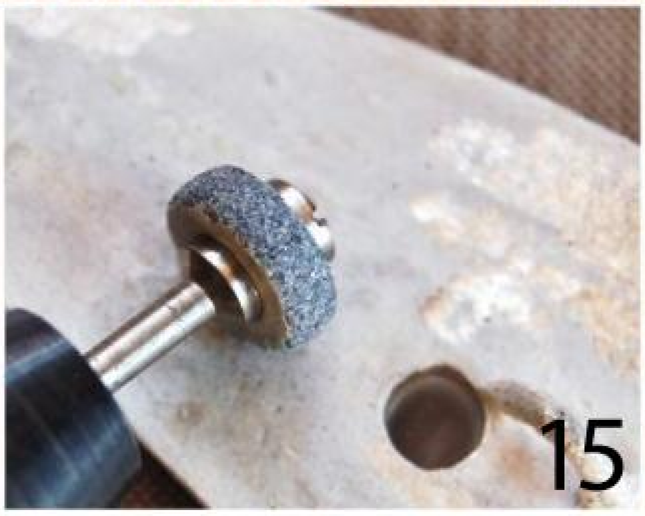
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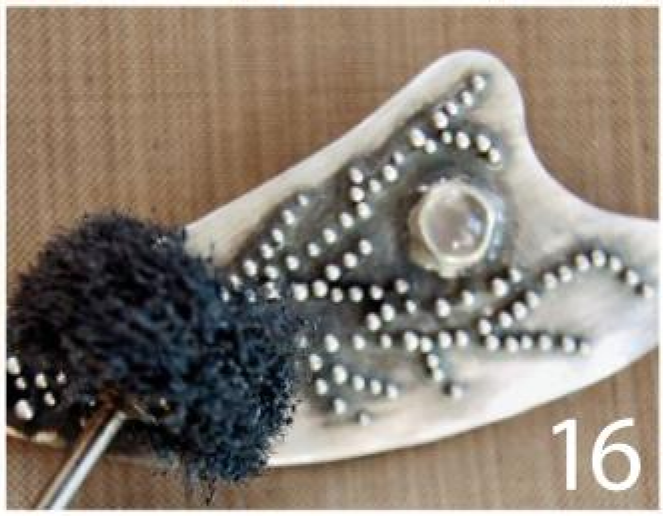
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Process photos by Marian Ward.

Make and add the bezel. Wrap a strip of ⅛-in. (3 mm) fine-silver bezel wire snugly around an 8 mm translucent cabochon **[11]**. Use the fine-tip permanent marker to mark the bezel wire where the ends overlap, and flush-cut the wire at the mark. Form the bezel wire into a ring so that the ends meet flush. Apply a dab of metal clay slip to the inside and outside of the join **[12]**. Allow the slip to dry completely, then sand it smooth.

Place the bezel ring over the hole in your fired pendant. Use metal clay slip to attach the bezel wire to the pendant **[13]**.

Fire the pendant again and allow it to air-cool.

TIP: If you do not wish to fire a metal clay piece twice to attach a bezel, you can use soldering techniques instead. If you do, first thoroughly burnish the area so the porous metal clay doesn't absorb the solder.

Finish the pendant. Tumble-polish the pendant with stainless steel shot and a drop of burnishing compound for at least two hours. Rinse and dry the pendant.

Use wire cutters to trim the wire ends at the back of the pendant **[14]**. Use a grinding wheel in your flex shaft to smooth the back of the pendant **[15]**. Use sanding papers or radial bristle disks in progressively finer grits from 220 to 800 grit to remove the grinding marks and to smooth the surface to your desired finish.

If you wish, patinate the pendant with liver of sulfur or another patina of your choice (see, "Experiment with a Traditional Japanese Patina," *page 56*), then use a buffing wheel or sanding papers to polish the high points of the piece **[16]**. Use a bezel pusher and burnisher to set your cabochon in the bezel. AJ

ASK THE ARTIST: MARIAN WARD

What's your favorite local source of inspiration?

"I live in Sedona, Ariz., where I am minutes away from the Coconino National Forest. On my daily hikes I am constantly surprised by variations in the color and texture in nature — sun-basking lizards, snow-covered cactus, etc. Surrounded by local wildlife, I never know what inspiration awaits." Contact: www.metalclaycentral.com

Get Hooked on a One-Tool Wire Technique

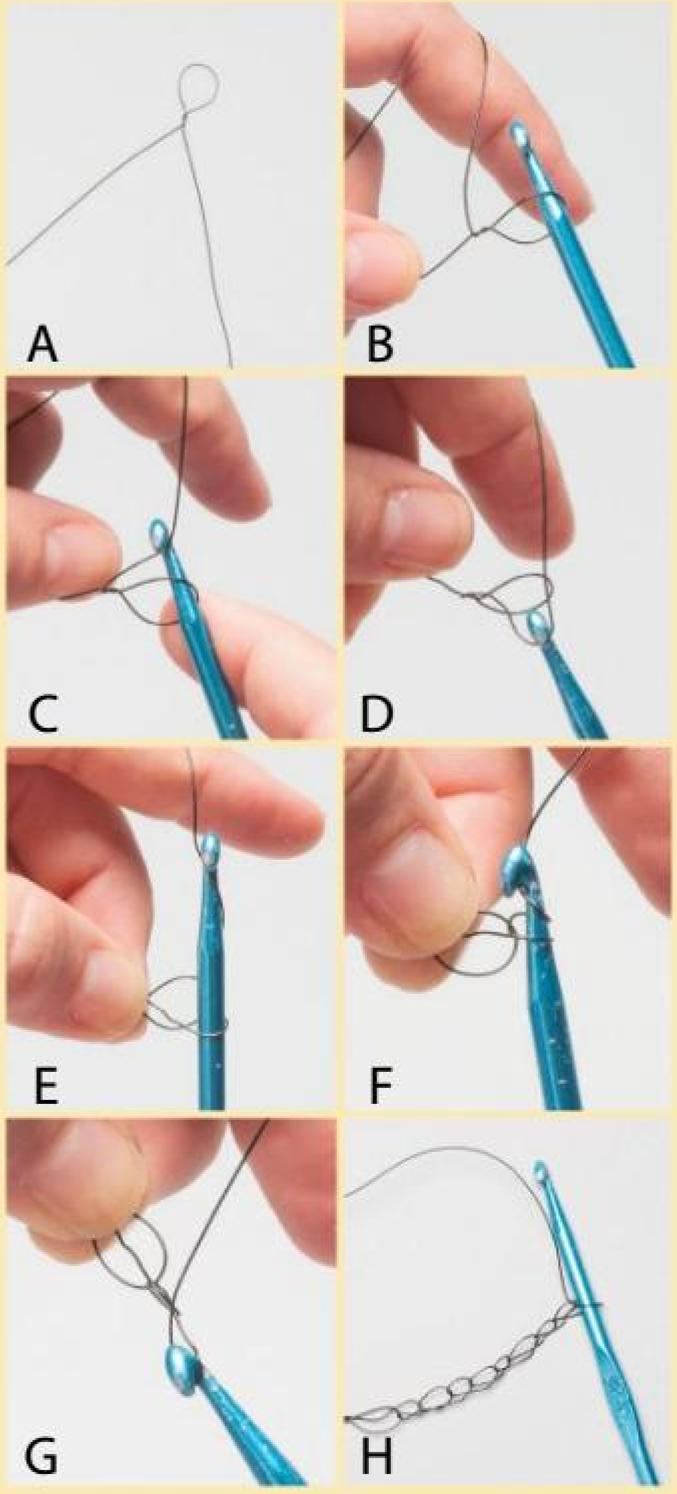
Use a crochet hook to create lightweight earrings with fine-gauge wire.

by Laurie Lucia

Once a technique used only by fiber artists, the art of crochet has come a long way in recent years. These days, wire crochet is a quick and versatile way to make stunning jewelry without a lot of materials or equipment. It's portable, too — you can do it anywhere! If you've never crocheted before, don't worry, only basic crochet stitches and techniques will be used for this project. So pull out your hook and give these earrings a try! I've used low-cost craft wire here, which gives you lots of color options, but you can dress them up by using fine-silver or gold-filled wire instead.

how to crochet: foundation row

If you've never crocheted, the idea can be daunting. But once you get the hang of the basics, you'll wonder why you ever thought crochet was hard. To create the foundation row: Working off the spool, measure 3–4 in. (76–102 mm) from the end of the wire, and make a loop slightly larger than your crochet hook. Twist twice to close the loop **[A]**. Grasp the wire tail firmly between your thumb and middle finger to anchor the wire, and loop the working wire over your index finger to make it easy to catch with the hook. Insert your crochet hook into the loop from below **[B]**, and hook the working wire from behind **[C]**. Pull the wire down through the first loop, creating a second loop **[D]**. Insert your hook up through the new loop **[E]**, hook the wire from behind **[F]**, and pull it through to form another loop **[G]**. Repeat until you have as many stitches in your foundation row as you need **[H]**.



BASICS & VIDEOS

Learn fundamental techniques in these bonus tutorials:	B	🎥
Forging your own ear wires	●	●

B Basics, *page 73*
🎥 Videos, www.artjewelrymag.com/videos

ONLINE EXTRA

Make your own ear wires

subscribers Try out tutorials for six different ear-wire styles!

www.artjewelrymag.com/reference

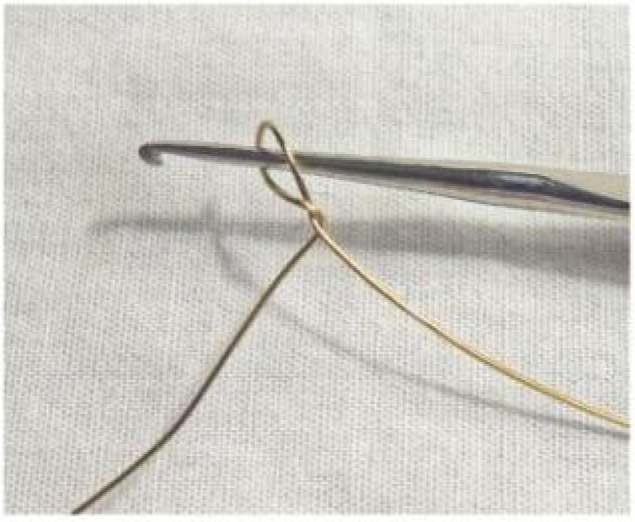
materials

- Craft wire: 28-gauge (0.32 mm), 15-yard (13.5 m) spool
- 4–6 mm pearls, **2**
- Ear wires, **2**

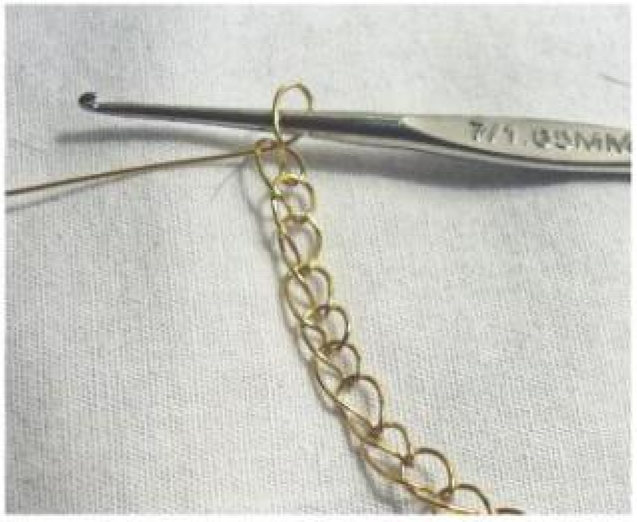
tools & supplies

- 1.65 mm crochet hook
- Pliers: flatnose and roundnose
- Flush cutters

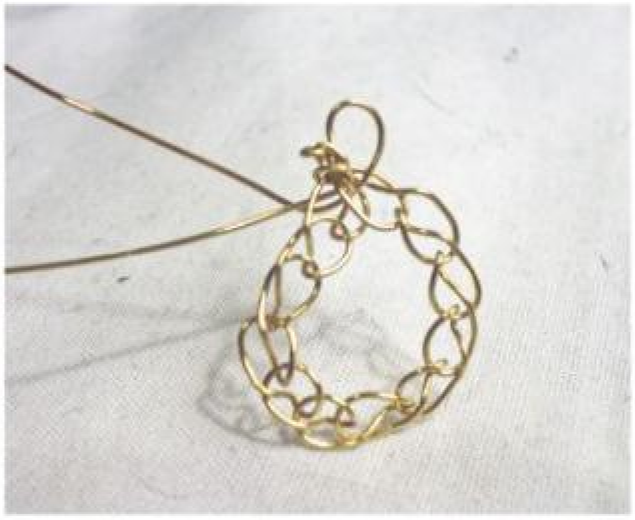
Find out where to buy supplies, *page 79*
See Safety Basics, *page 75*



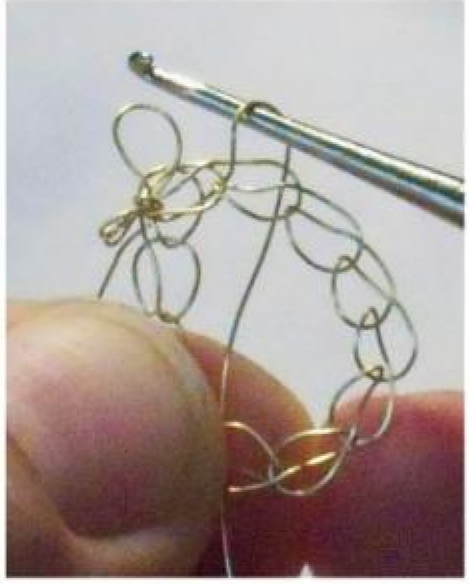
1 Working from the spool of wire, make a loop by wrapping the wire loosely around the crochet hook and twisting once. Leave a 3–4 in. (76–102 mm) tail. The wire on the spool is your working wire.



2 Create a 12-stitch foundation row (see "How to Crochet: Foundation Row," *page 53*) in the working wire.



3 Insert the loop of the 12th single crochet stitch into the loop of the first single crochet stitch. Insert the wire tail into the loop of the 12th stitch. Wrap the end of the tail a few times at the connection point to secure the stitches and to pull the foundation row into a complete circle.

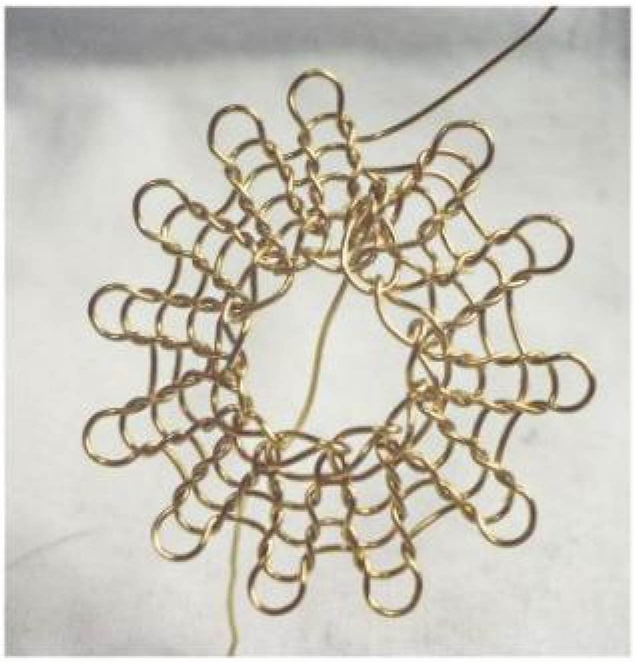


4 Working clockwise on the outside of the foundation row, insert your crochet hook into the next stitch. Catch the working wire on the hook and pull it up through the stitch to form a loop. Use the neck of the hook to help create an even loop.

NOTE: You are not actually crocheting here, just pulling up loops.

Slip the hook out of the wire loop and move to the next crochet stitch. Repeat to pull up a loop in each of the 12 stitches of the foundation row, creating a second row of loops.

NOTE: Remember to keep an even tension on the wire. This will help to keep your loops the same size.

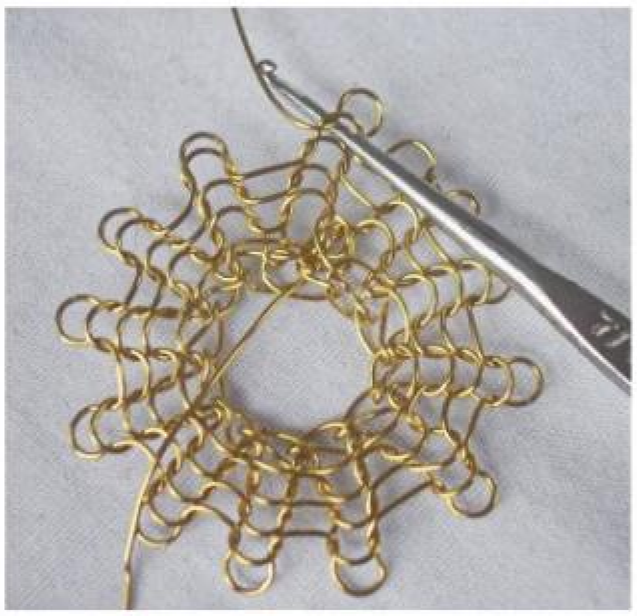


5 Continue working in a clockwise pattern until you have completed five rows of loops.

the possibilities...

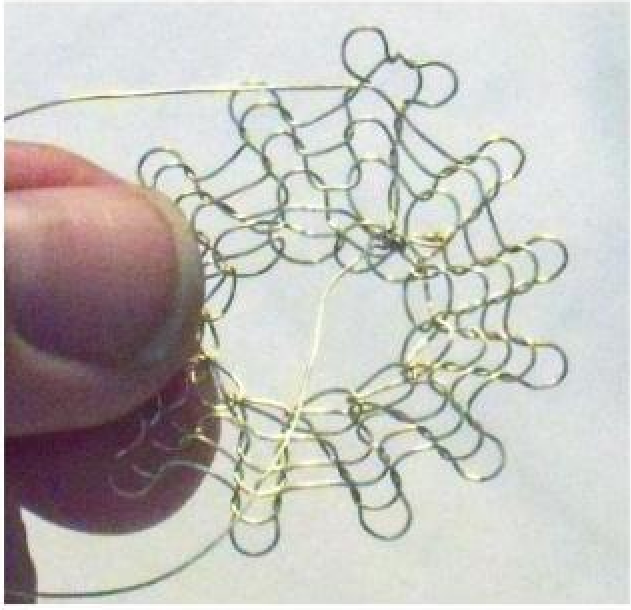
Try using fewer foundation row stitches to create a smaller earring, or use more to create a larger center to make room for larger beads. Use different size crochet hooks to make larger or smaller loops. Experiment with different colors of wire, beads, crystals and pearls. Make several disks and use them as links for a bracelet or necklace. The variations and possibilities with this technique are endless!

...are endless!

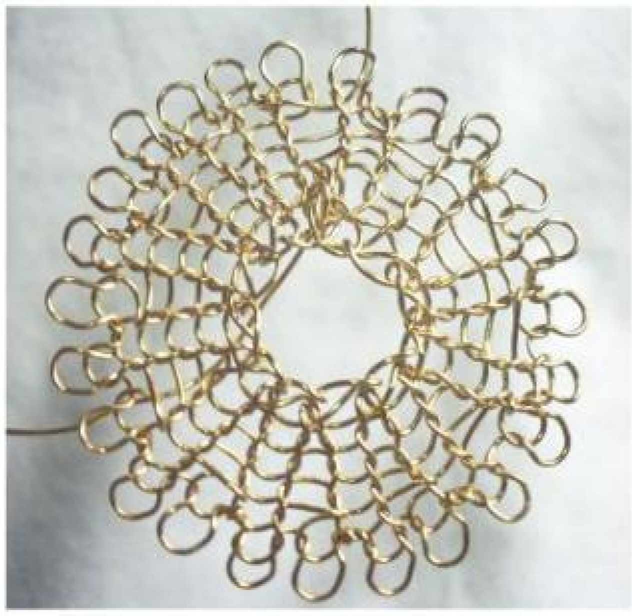


6 Insert your crochet hook into the first loop of the fifth row and pull up a loop. Turn the earring over and, working from the back side, insert your hook into the same fifth-row loop and pull up a second loop. This will create a "bunny ear" stitch.

NOTE: Use the "bunny ear" stitch to increase the number of loops per row. Otherwise, as the earring gets larger, so does the space between the stitches.

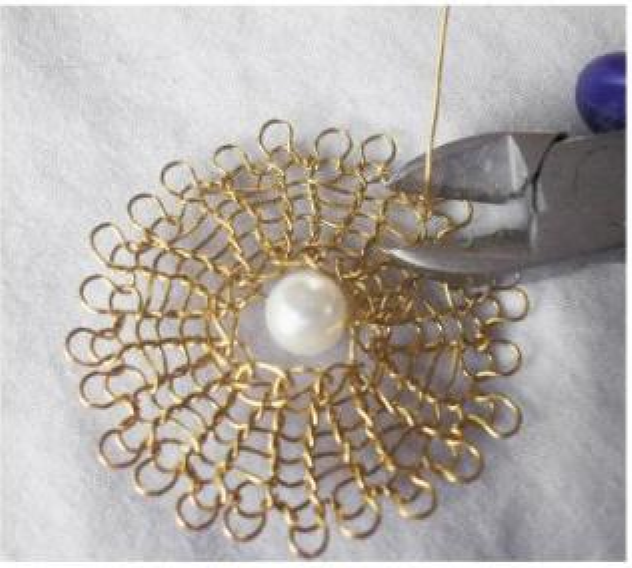


7 Turn the earring back over to the front side and repeat to make bunny ear loops through the remaining loops of the fifth row.

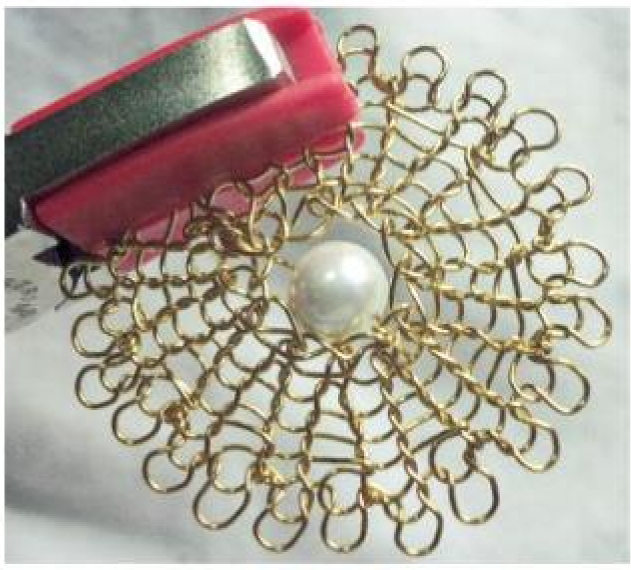


8 Working clockwise, add a seventh row of loops, one through each of the 24 loops in the sixth row. Use a pair of flush cutters to cut the wire from the spool, leaving a 3–4 in. (76–102 mm) tail. Wrap the working-wire tail around the bottom of the last loop a few times. Trim the end.

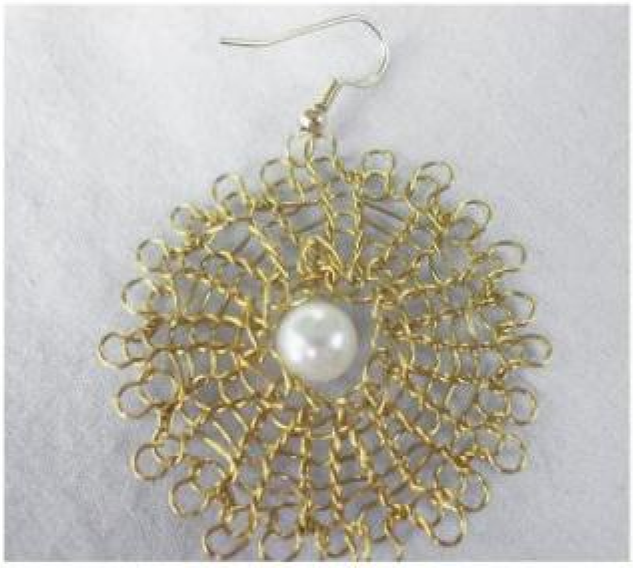
Process photos by Julie Boozer.



9 String a pearl or bead of your choice onto the original wire tail. Pass the wire tail across the width of the circle so that the pearl rests in the hole in the center. Secure the wire tail by wrapping it around the foundation row. Trim the wire end.

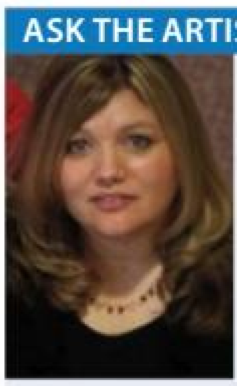


10 Use roundnose pliers to make any necessary adjustments in the shape and spacing of any of the loops. Use nylon-jaw flatnose pliers to carefully flatten and work-harden the earring.



11 Add a prefabricated or handmade ear wire to one of the loops in the outside row. Repeat the steps to make a second earring.

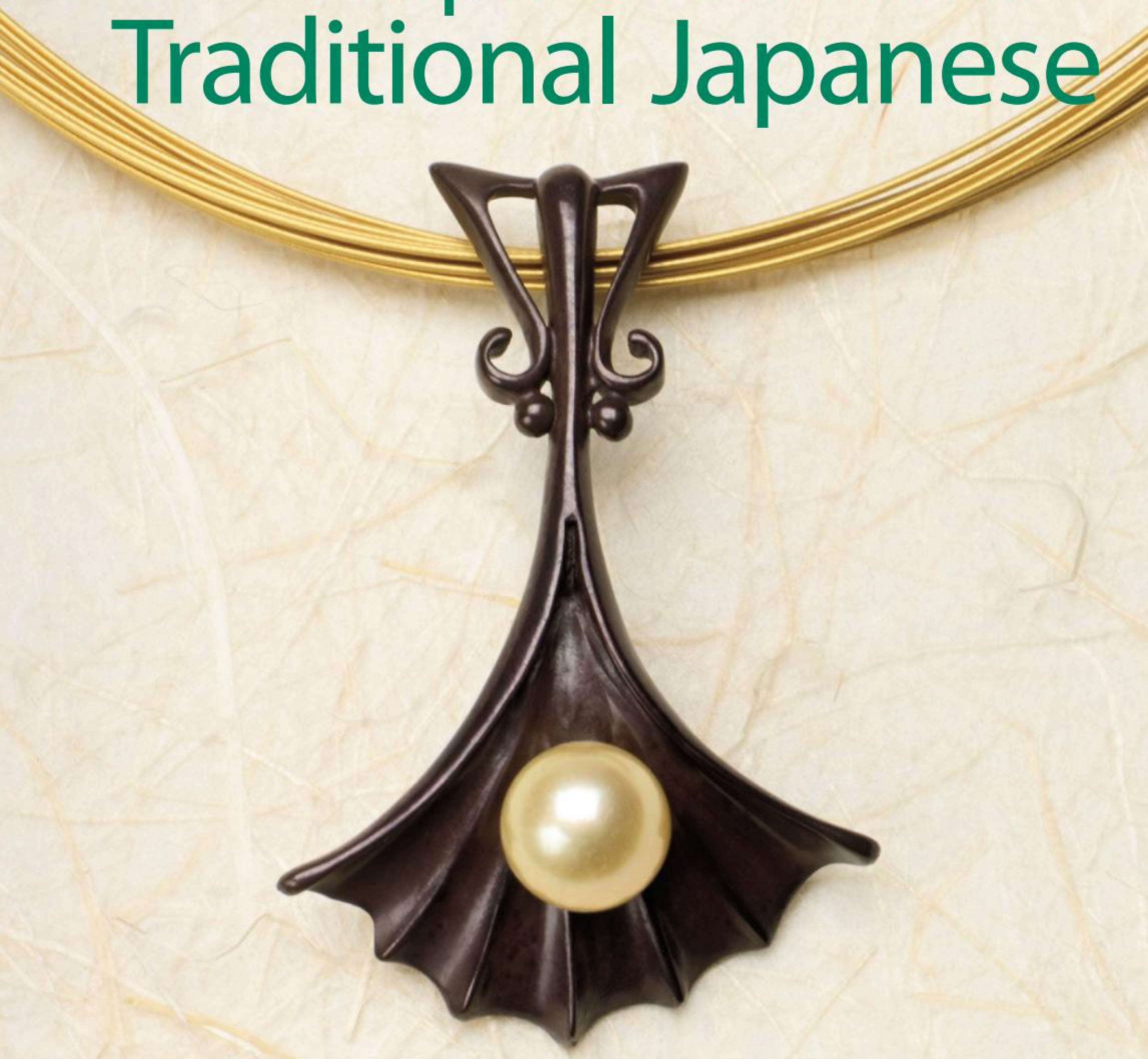
ASK THE ARTIST: LAURIE LUCIA



What's your favorite local source of inspiration?

"Nature. If you're wondering if certain colors go well together, just look at the flowers! Nature blends colors, mixes media, contains abstracts, and always looks amazing!"
Contact: laurielucia@hotmail.com

Experiment with a Traditional Japanese



Trade in your default patina for one you make yourself using easy-to-acquire household materials.

by Kazuhiko Ichikawa

Patina

Gin-hurubi is one of the easiest and safest traditional Japanese patinas to use. Translated to English, *gin* means "silver" and *hurubi* (or *furubi*) means "antique color." With results ranging from light brown to dark purple depending on the proportion of the ingredients, this patina works best on fine silver. Although in Japan, ordinary liver of sulfur patina is also commonly referred to as gin-hurubi, the recipe I share is for the traditional gin-hurubi patina.

Before you begin. Complete all fabrication processes, including polishing, before you apply the patina **[1]**. Solder doesn't readily accept the patina, so carefully remove any excess solder.

NOTE: Gin hurubi is a patina for silver, so most alloys containing silver (such as sterling silver, shibuichi, and Argentium sterling silver) will darken. The color may vary on alloys due to uneven metal composition, so to ensure an even result, I use fine silver or create a layer of fine silver on sterling silver.

Prepare the silver. (If you use fine silver, you can skip this step.) Use a torch with a soft, bushy flame to heat the sterling silver **[2]**. The copper on the surface will oxidize and turn dark. Quench your piece in water, and place it in pickle to clean it. Rinse and dry your piece.

Repeat this process 5–6 times, or until the surface of the sterling silver doesn't darken anymore when heated. After you remove your piece from the pickle the final time, it will appear matte white.

NOTE: This process, commonly known as "depletion gilding," eliminates copper from the surface of sterling silver, leaving behind a thin layer of fine silver.

Clean the silver. Use a toothbrush with a baking-soda-and-water paste to clean and polish your piece **[3]**. This method is gentle enough to clean the silver without removing the fine-silver layer. Don't use a polishing motor to buff your piece: this is too aggressive. Rinse the piece thoroughly.

NOTE: This process also degreases the metal, an essential step when preparing metal for any type of patina.

materials

- Fine or sterling silver piece, fully fabricated and polished
- Vinegar, 100 cc (approx. 6½ Tbsp.)
- Table salt, 6 g (approx. 1¼ tsp.)
- Copper sulfate, 6 g (approx 1¼ tsp.)

tools & supplies

- Torch with soldering/annealing setup
- Pickle pot and pickle
- Glass container
- Nonmetal stirrer
- Toothbrush
- Baking soda
- Latex or nitrile gloves
- Container for hot water (optional)
- Abrasive papers (optional)
- Paste wax (optional)

Find out where to buy supplies, *page 79*
See Safety Basics, *page 75*

BASICS & VIDEOS

Learn fundamental techniques in these bonus tutorials:	**B**	🎥
Pickle Basics	●	●

B Basics, *page 73*
🎥 Videos, www.artjewelrymag.com/videos

ONLINE EXTRAS

- subscribers Compare liver of sulfur and gin hurubi on fine silver, and see samples of gin hurubi on other silver alloys.
- subscribers Learn how to prep your metal before applying a patina.
- Sealants: When and How to Use them

www.artjewelrymag.com/reference

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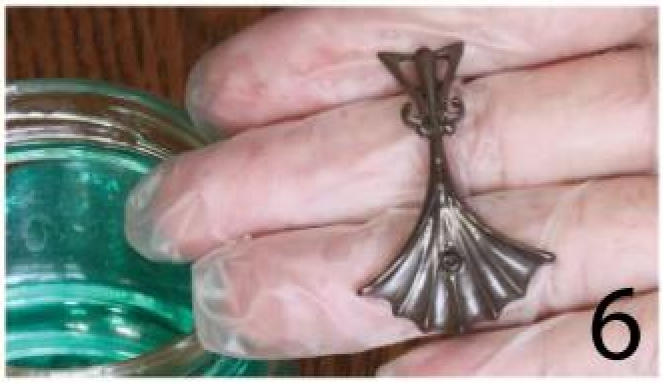
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Process photos by Kazuhiko Ichikawa.

Mix the patina. Put on a pair of latex or nitrile gloves, and pour 100 cc (approx. 6½ Tbsp.) of white vinegar (I use Crops, one of the cheapest vinegars in Japan) into a small glass container. Carefully add 6 g (approx. 1¼ tsp.) of salt and 6 g (approx. 1¼ tsp.) of copper sulfate to the vinegar.

NOTE: Copper sulfate is used as a fungicide, root killer, algaecide, and herbicide. The hydrated version (the most commonly available, known as copper sulfate pentahydrate) is bright blue and granular, and can be found at pool, aquarium, garden suppliers, and hardware stores under a variety of brand names. Make sure the kind you buy is pure copper sulfate (or copper sulfate pentahydrate) with no additives.

Use a nonmetal stirrer to stir the solution until the salt and copper sulfate fully dissolve. The liquid will turn clear blue or blue-green **[4]**. Use the end of a wooden dowel to crush the copper sulfate in the solution to speed up the process.

NOTE: I prefer a dark patina, and that's the recipe I give, but you can get lighter, darker, brownish, and purplish tones by adjusting the recipe. After you've tried the patina following this recipe, alter the proportions of the ingredients to create a formula that produces your desired results.

Apply the patina. Place your clean piece into the gin-hurubi solution **[5]**. Slightly agitate your piece throughout the process to make sure you don't trap any bubbles on or under it; bubbles will hinder the reaction and your patina will be uneven.

Let your piece rest in the solution for 10–15 minutes or until it turns dark brown.

NOTE: Place the glass container into another container full of hot water to accelerate the process.

Remove the piece from the solution, and rinse and dry it thoroughly **[6]**.

NOTE: If the patina turns out too brown, expose it to the sun to make it darker. If it's very dark brown or black, there's no need to expose it to the sun, but be aware that the color may become darker over time.

If the color isn't as dark as you desire, clean the piece with baking soda again, and place it back into the solution. If it's too dark, polish it with baking soda to reduce the patina.

If the patina is uneven, remove it with abrasive papers or heat the piece with a reducing flame. Repeat the "depletion gilding" step before reapplying the patina; it's impossible to remove the patina without removing the fine-silver layer.

NOTE: Since it's made with vinegar, gin hurubi has a high resistance to acid, so you can't remove it by pickling. (This also means you don't have to worry about accidentally splashing lemon juice or salad dressing on your jewelry while wearing it.)

Finish your piece. For added protection, as well as for aesthetic reasons, I always apply a paste wax (I use Renaissance Wax) to my finished pieces.

Store and dispose of the patina. Store the used solution in a container with a tightly closed nonmetal lid. It can be re-used until it no longer works well (see "Patina Disposal," *left*).

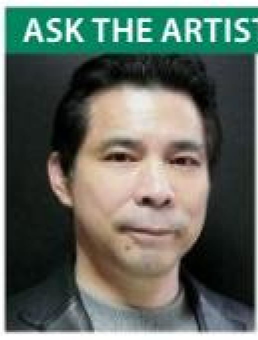
patina disposal

Although it's very pretty, the gin-hurubi solution contains copper ions (copper atoms missing two electrons [Cu^{2+}]), which are an environmental toxin known to poison fish and cause major problems when it comes in contact with natural waterways. Before discarding your spent solution, check with your local government for regulations regarding the proper disposal of copper ions.

One way to remove the copper ions is to add aluminum foil to the solution. When it is added to the salt, vinegar (acetic acid), and copper sulfate, electrons can move from the aluminum atoms to the copper atoms. When this happens, the aluminum is oxidized, dissolves into the acid, and forms aluminum sulfate. The copper, having accepted two electrons, will form a solid and sink to the bottom of the container. It can then be dried and recycled. The reaction is exothermic, so be sure that you don't touch the container, as it can get hot, and always work in a well-ventilated space. Make sure that all of the copper has been removed, so if your solution has a bluish color, add more aluminum foil.

What about the resulting aluminum sulfate? It's is often used in the treatment of waste water and will be removed by waste-water treatment plants. ***— Dr. Chris Babayco, Assistant Professor of Chemistry, Columbia College, Columbia, Mo.***

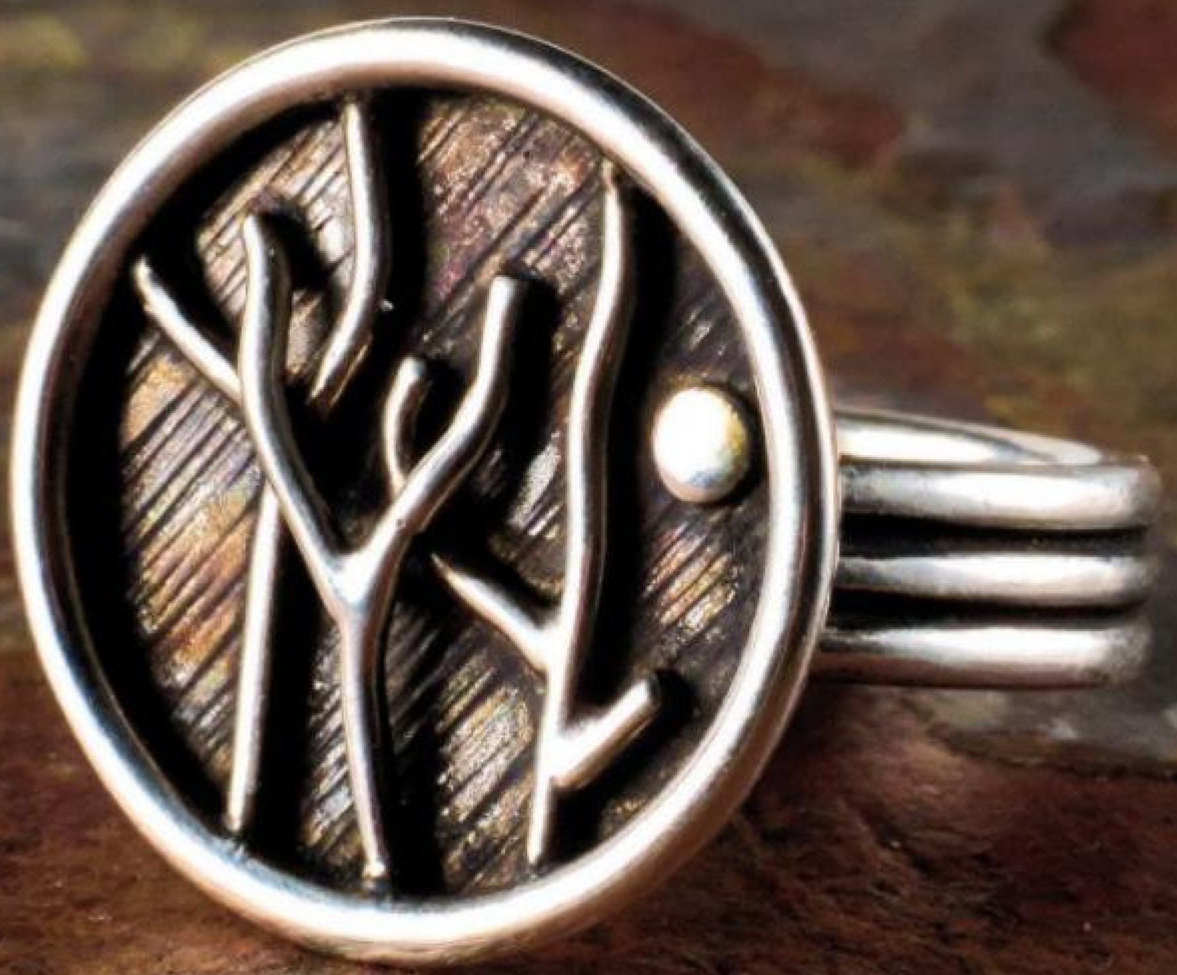
ASK THE ARTIST: KAZUHIKO ICHIKAWA



What's your favorite local source of inspiration?
"I know some antique jewelry shops and a traditional Japanese metal works shop in Tokyo. I often visit them to have a chance to get in touch with the sense and skills of artists from olden days."
Contact: tanzanite1837@yahoo.co.jp

PROJECT
INTERMEDIATE | METAL

Fuse and Solder a LAYERED LANDSCAPE RING



Explore the benefits of Argentium sterling silver by making hot connections with less flux, less solder, and less cleanup.

by Joe Silvera

materials

- Argentium sterling silver wire, round, dead-soft:
  - 14-gauge (1.6 mm), 12 in. (30.5 cm)
  - 18-gauge (1.0 mm), 6 in. (15.2 cm)
- Argentium sterling sheet, 24-gauge (0.5 mm): 1 x 1 in. (25.5 x 25.5 mm)

toolboxes, *page 76*

- Hammering
- Soldering/annealing
- Finishing

additional tools & supplies

- Flush cutters
- Ring mandrel
- Pliers: 13–20 mm forming pliers (optional); flatnose or half-round; chainnose
- Metal hand shears
- Argentium sterling silver wire solder: hard, medium, and easy
- Ceramic soldering board
- Two-hole metal punch, 2 mm ($\frac{5}{32}$-in.)
- T-pins (optional)

Find out where to buy supplies, *page 79*
See Safety Basics, *page 75*

ONLINE EXTRA

Check out our quick fusing chart to see when to fuse and when to solder.
www.artjewelrymag.com/reference

BASICS & VIDEOS

Learn fundamental techniques in these bonus tutorials:	B	🎥
How to file		●
Fusing metal with a torch		●
Sweat soldering	●	

B Basics, *page 73*
🎥 Videos, www.artjewelrymag.com/videos

When I first sketched the idea for this ring, I knew I had to use Argentium sterling silver to make it. I could use the way the metal fuses to make simple wire look like tree branches, and to join three separate wires into a fluted band ring. Also, since Argentium sterling silver needs less flux and less pickle, and melts at a lower temperature, it's easier to use with home-studio-friendly butane torches. If you haven't tried Argentium sterling silver before now, be prepared to fall in love with sterling 2.0!

Form and fuse the frame ring. Flush-cut a 58 mm (2$\frac{9}{32}$-in.) piece of 14-gauge (1.6 mm) Argentium sterling silver wire. Trim both ends of the wire flush and use a needle file to smooth any burrs and make the ends completely flat. Use forming pliers or a ring mandrel to form the wire into a ring **[1]**. Make sure the ends of the ring meet flush with no gaps. Overlap the ends several times to create tension in the wire so the ends don't spring apart. If necessary, use the needle file to refine the ends.

TIP: Before fusing or soldering a ring, use flatnose or half-round pliers to flatten it at the join (like a D-ring). This ensures that your ends meet flush. It also allows you to see exactly where your join is so you can direct the heat exactly where you want it.

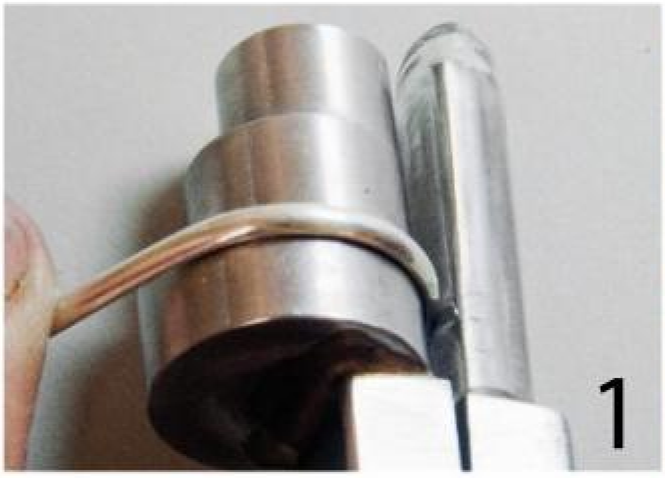
Place the frame ring on a honeycomb board or firebrick. Use a handheld butane torch to heat the whole ring, then focus the flame on the join **[2]**. Use a large flame to balance the heat so that the ring glows bright red on each side of the join. As the surface of the metal shimmers, watch the join. When the metal fills the join, and the line vanishes, immediately remove the flame. Let the frame ring cool until it is no longer red before quenching it in water, or it may break.

If the surface of the frame ring is light grey, pickle it for three minutes or gently heat it to burn away the grey. Once the ring is clean, place it on your ring mandrel and use a rawhide mallet to refine its shape.

Texture the backplate. Use metal shears to cut a 25.5 mm (1-in.) square of 24-gauge (0.5 mm) Argentium sterling silver sheet. Place the sheet on a steel bench block and use the sharp, cross-peen face of a riveting hammer or a sharp texturing hammer to texture one side of the sheet **[3]**.

NOTE: To make longer, rain-like lines of texture, keep the hammer marks parallel to each other.

Flatten the sheet with a rawhide mallet. If the metal is too work-hardened, anneal it. Don't use any flux; instead, mark each side with a permanent marker. Lay the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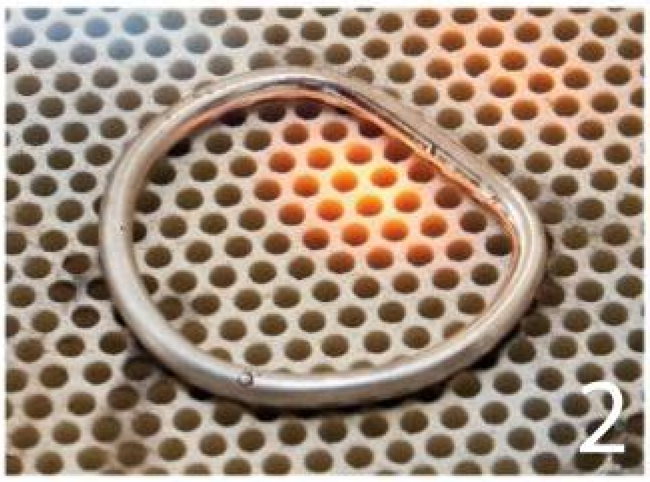
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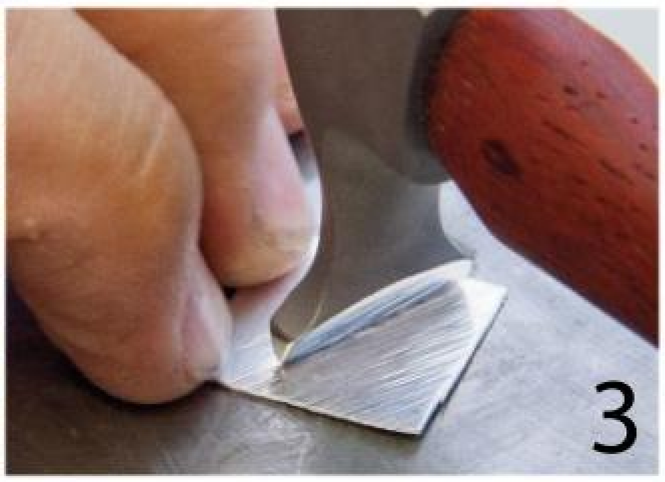
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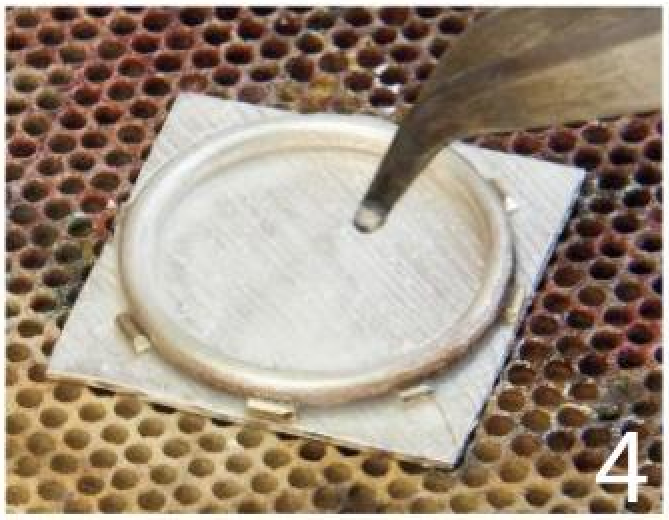
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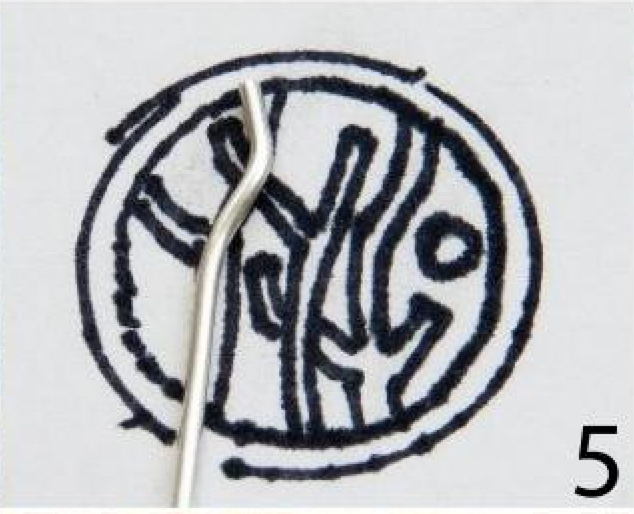
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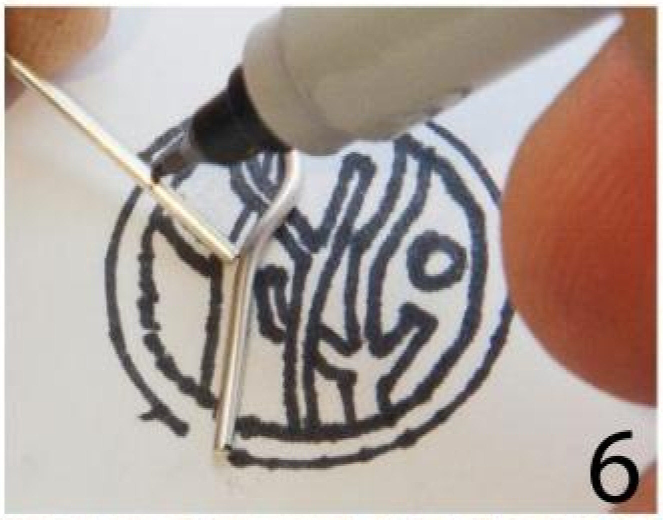
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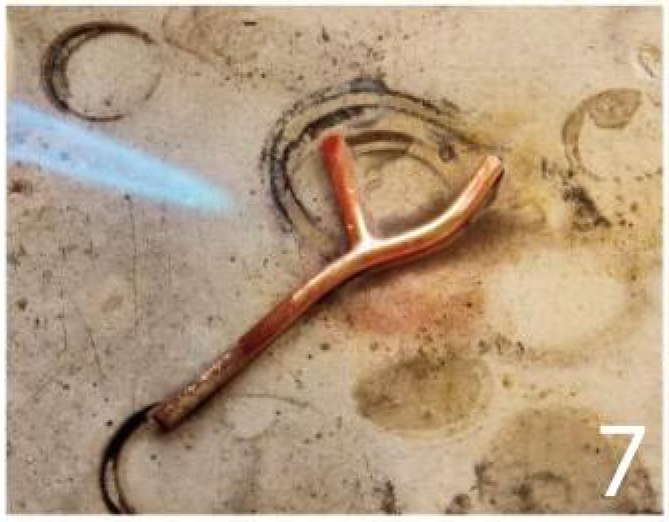
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sheet on your honeycomb board or firebrick and heat it with the torch until the marks fade. In dim light, you should see a faint red glow on the whole surface.

NOTE: During annealing, Argentium sterling silver will slump flat to the surface it is lying on, so make sure you lay it on a space with no imperfections so that it doesn't break.

Once the sheet is annealed, wait 10 seconds (or until the red disappears) before quenching. Pickling shouldn't be necessary.

Solder the frame ring to the backplate. Use 320-grit abrasive papers to sand a flat edge on one side of your frame ring. Place the ring on your annealed backplate, and make sure the two pieces fit flush without gaps. Flux the textured side of the sheet and the flat underside of the ring. Cut eight 2 mm (5⁄64-in.)-long pieces of hard Argentium solder. Evenly space the solder around the outside of the ring so that each piece touches both the ring and the sheet **[4]**.

Heat the assembly evenly, then concentrate the flame on the inside of the ring, drawing the solder inward. Heat the piece until the solder flows around the bottom of the frame. Cool, quench, pickle, and rinse the assembly. Use shears to trim the excess metal away, and use a hand file to file the sheet close to the join.

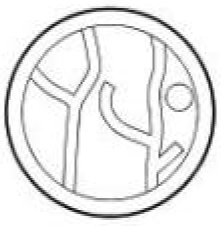
Form and fuse the trees. Use Template 1 (*right*) as a guide. Use chainnose pliers to bend the end of a piece of 18-gauge (1.0 mm) Argentium sterling silver wire to mimic the trunk of one of the trees **[5]**. Use a fine-tip permanent marker to mark the wire at the bottom edge of the frame. Trim the wire flush at the mark.

NOTE: Don't trim your wire exactly to the length of the trees in the template. Cut them a little longer so that you can customize them to the frame later.

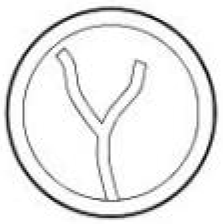
Place the end of the wire against your just-cut trunk piece, following the template for a branch. Mark the wire at the edge of the frame **[6]**, and trim it. (You will form the curve after fusing.) Repeat to form your wire into the second tree trunk and branches, according to the template.

Form a third tree as before, using Template 2 (*above right*). (The two trees from Template 1 will lie flat inside the frame, and the third, from Template 2, will overlap them both.)

Lay out the trunk and branch of the first tree on a cool soldering surface, such as a ceramic soldering board. Make sure the end of the branch touches the trunk.



Template 1

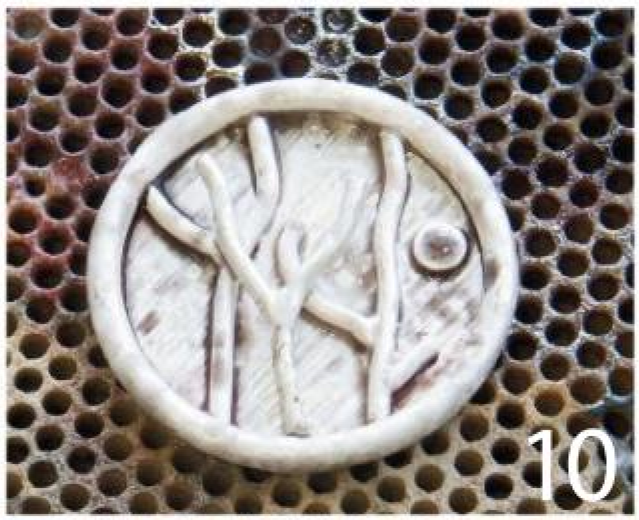


Template 2

NOTE: "Cool" soldering surfaces are surfaces that act as a heat sink. Unlike a charcoal block, a ceramic soldering board will limit the heat that reflects back up from the surface, which will help prevent your wires from melting.

Light your torch and turn down the gas. Use a small flame to fuse the branch to the trunk **[7]**. Hold the heat a little longer on the join after it starts to fuse to let it thicken slightly, mimicking the look of real tree branches. Allow the metal to cool completely, then remove it from the soldering board.

Repeat to fuse the other wire trees.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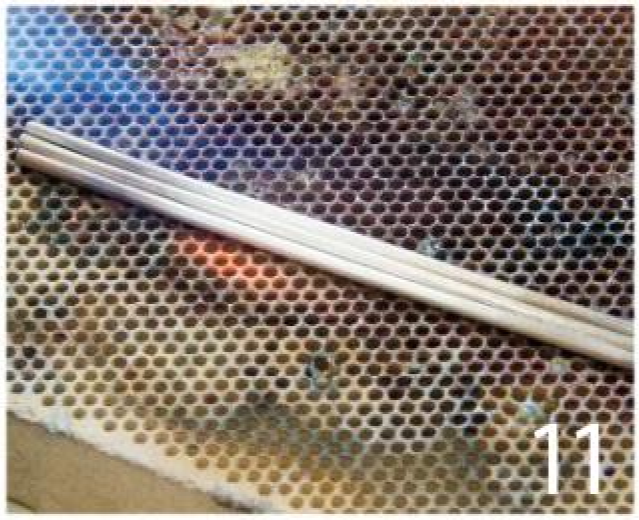
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what is argentium sterling silver?

Traditional sterling silver is 925 parts fine silver and 75 parts copper. Argentium sterling silver is similar, except that some of the copper in the alloy has been replaced with germanium. Germanium prevents oxygen from penetrating the surface of the metal, which allows Argentium to resist both tarnish and firescale, making it a joy to work with! Less firescale means less pickling, less polishing, and less labor. However, there are a few key differences to remember:

- Argentium sterling silver can be fused with less distortion than fine silver.
- Argentium sterling silver melts around 1410°F (765°C) — lower than traditional sterling or fine silver. I recommend using Argentium sterling silver solders for better soldering and a better color match.
- Fine silver doesn't change color when heated, and traditional sterling silver turns dark grey with firescale. Argentium sterling silver will stay white or get a light grey scale. This can be removed easily by heating the surface with an oxidizing flame, pickling, and/or light sanding.
- Use separate solder boards, bricks, files, pickle, and polishing tools for Argentium sterling silver. Shared tools can contaminate clean Argentium sterling silver with base metal, which can cause it to tarnish, develop firescale during heating, or not polish as beautifully.

For a comprehensive look at Argentium sterling silver, see Cynthia Eid's article "Road Testing Argentium Sterling," September 2006 issue.

Cut the moon. Use a two-hole metal punch to punch a 2 mm (5⁄32-in.) circle out of the 24-gauge (0.5 mm) Argentium sterling silver sheet. This circle will become the moon.

Melt a small (approximately 1 mm) chip of medium Argentium solder onto the back of the moon, and allow it to cool completely. Set it aside.

Solder the trees and moon to the frame assembly. Place the two wire trees from Template 1 inside the frame assembly and trim each so that it fits inside the frame **[8]**. The trees should lie flush to the backplate, and touch the inside of the frame ring at the top and bottom. Set the third wire tree aside.

Flux the backplate inside the frame, the underside of the moon, and the points where the two trees touch the inside of the frame ring. Place small pallions of medium Argentium solder against the joins where each tree touches the frame ring, and add pallions evenly along the edges of the wires. Set the moon solder-side-down in place on the backplate.

Heat the assembly until the solder flows **[9]**. Cool, quench, pickle, and rinse the assembly.

Position the third tree above the other two trees, bending it as necessary. It should touch the bottom of the frame ring and sit flush where it overlaps the other trees. For a better fit, you can also use a needle file to create small flat spaces on the third wire tree at the overlap points. Place small pallions of medium Argentium solder at each overlap point, and where the tree touches the frame ring. Heat the assembly until the solder flows **[10]**. Cool, quench, pickle, and rinse the assembly.

NOTE: Be careful while soldering the last tree; parts of it are unsupported and could slump or break.

Make the ring band. Determine the length of 14-gauge (1.6 mm) wire required to make a ring your size (see "How Much Wire," *left*, or refer to a ring blank size chart).

Flush-cut three pieces of that wire slightly longer than your measurement to allow for any misalignment or shrinkage when fusing.

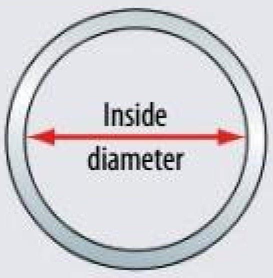
Use a rawhide mallet and steel bench block to straighten the wires. Lay the wires flush with each other on your soldering surface. Use a large-flame butane torch to evenly heat all three, then focus the flame at one end to fuse the wires together **[11]**.

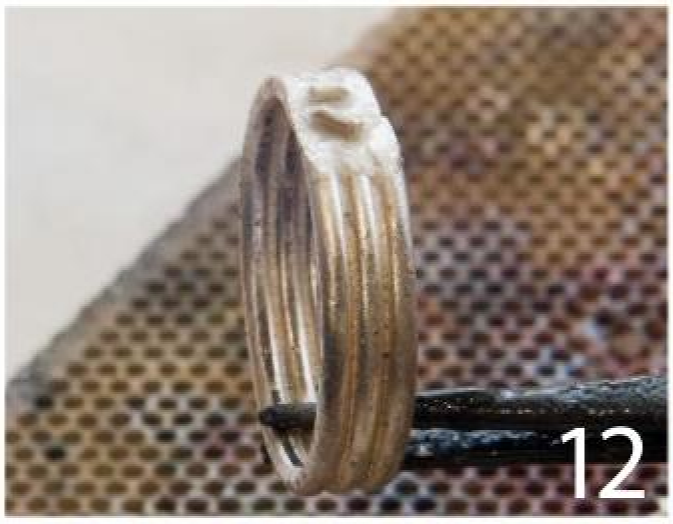
how much wire?

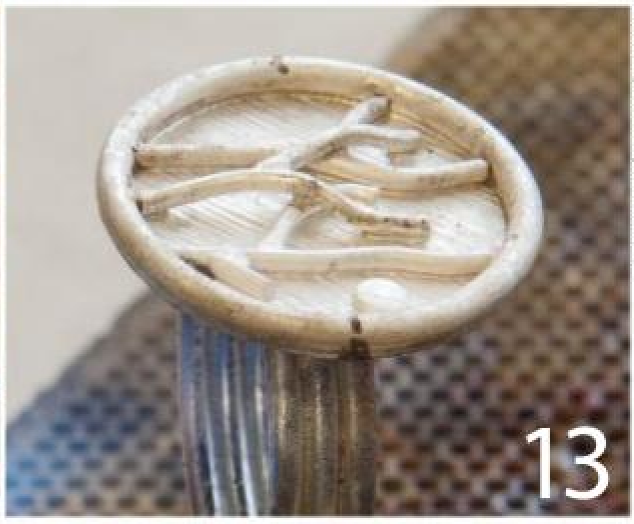
To determine what length of wire you need to make your ring band, you have to know the inside diameter (ID) of the desired ring size and the thickness of the metal. For ring bands 24–12 gauge (0.5–2.1 mm), you can use this formula:

ID (mm) + metal gauge (mm) x 3.14 = Length of wire (mm)

To see the full chart and calculate your ring size, visit: **www.artjewelrymag.com/reference**







Process photos by Joe Silvera.

You will see a thin, solder-like line flow between the wires as they fuse. Slowly move the flame along the entire length of the wires to form a solid strip.

NOTE: If there are any gaps between the wires, you can use T-pins to hold the wires together. Don't attempt to push the hot wires together while fusing. If you're too rough, you could break the wires.

Cool and quench the strip, and pickle it if necessary. Trim the strip to your ring size measurement, and use your ring mandrel and rawhide mallet to form it into a ring. You can either fuse the join, as you did with the frame ring, or solder it with hard Argentium solder. Cool, quench, pickle, and rinse the ring band.

Place the ring band back on the ring mandrel, and use the rawhide mallet to reshape it. Check the size of the band and make any adjustments needed.

Solder the frame assembly to the ring band. Use the hand file to flatten the outside of the ring band at the join. This ensures that the back of the frame assembly will sit flush on the ring band. Grip the bottom of the ring band in a third hand and adjust it so that the flat top of the ring is perfectly level.

Flux the top of the ring band and melt two 2 mm (5⁄64-in.) pieces of easy Argentium solder on the flat spot **[12]**. Allow the ring band to cool completely.

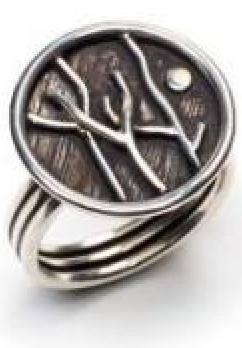
Flux the back of the frame assembly and center it on top of the ring. Check the fit from all sides to ensure that there are no gaps. Focus your torch directly under the base and the inside of the ring band to sweat solder the two together **[13]**. When the frame drops in place and solder flows to the edges of the join, remove the flame. Cool, quench, pickle, and rinse the ring.

Finish the ring. Use your needle file to smooth the seam around the outside of the frame assembly, removing the join line. Use coarse radial bristle disks or a black, medium-grit silicone polishing wheel in your flex shaft to remove any deep scratches or file marks, then polish the piece with a 400-grit (blue) radial bristle disk to give it an overall satin finish. If you wish, continue through 6 micron (peach) and 1 micron (light green) radial bristle disks to achieve a mirror polish.

Patinate the ring with the patina of your choice. Use a polishing pad or an extra-fine-grit (pink) silicone wheel in a flex shaft to remove the patina from the high points. AJ

tips for soldering and fusing argentium

- Argentium sterling silver is less conductive than traditional sterling silver, which means that you can build up heat faster to solder and fuse and spend less time heating the whole piece.
- Try not to use flux when fusing. When soldering, use flux sparingly, and only flux the join.
- Argentium sterling silver prefers an oxidizing flame. A charcoal block reduces oxides, so you may wish to use a firebrick or honeycomb board instead.
- Argentium sterling silver slumps when it's red hot; support it during fusing or soldering. Also, textures in your soldering surface may imprint on the metal, so choose a flat, smooth area to place your metal.
- Don't move Argentium sterling while it's red (even dull red) hot or it will break or stretch. The upside is, if it breaks, it's usually a clean break, and you can fuse the pieces back together.



Actual size

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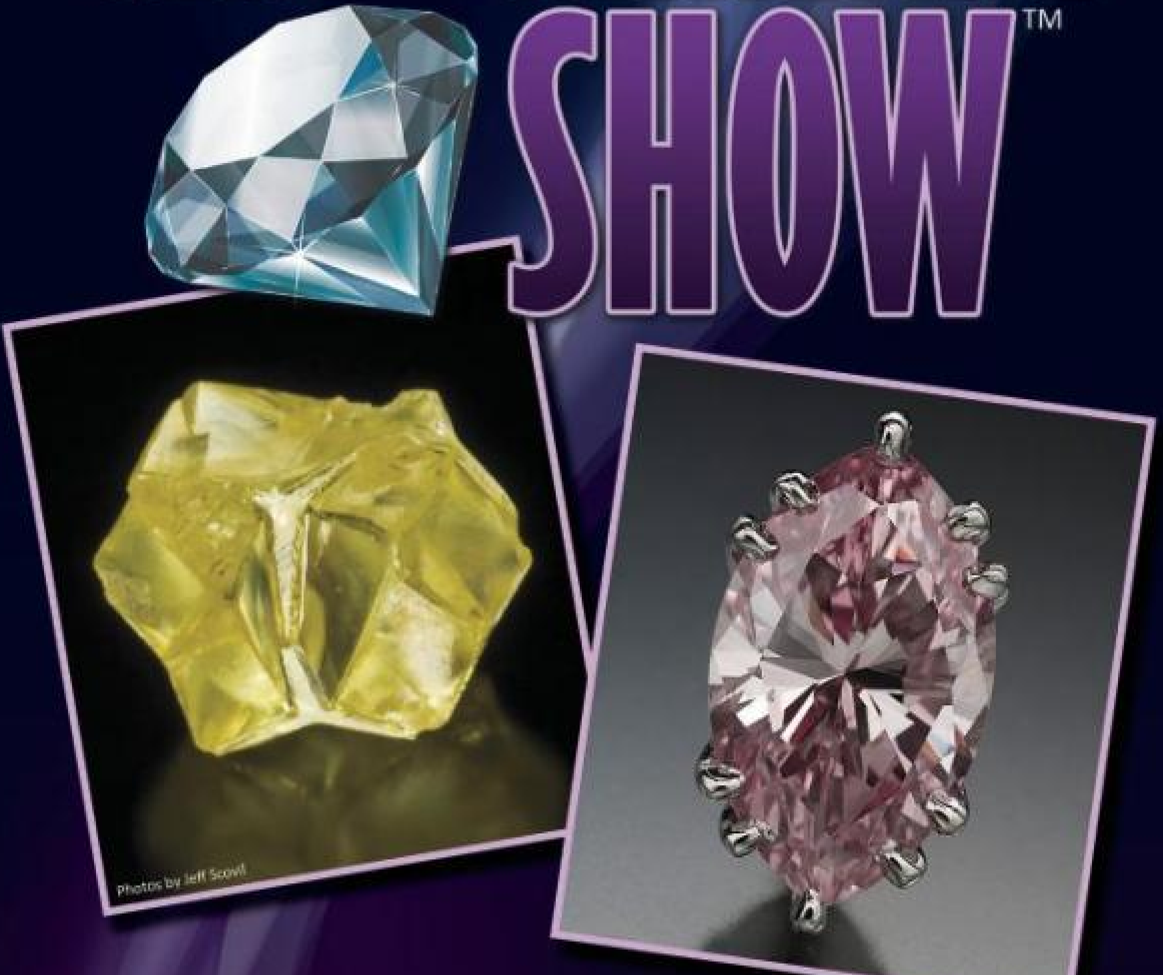

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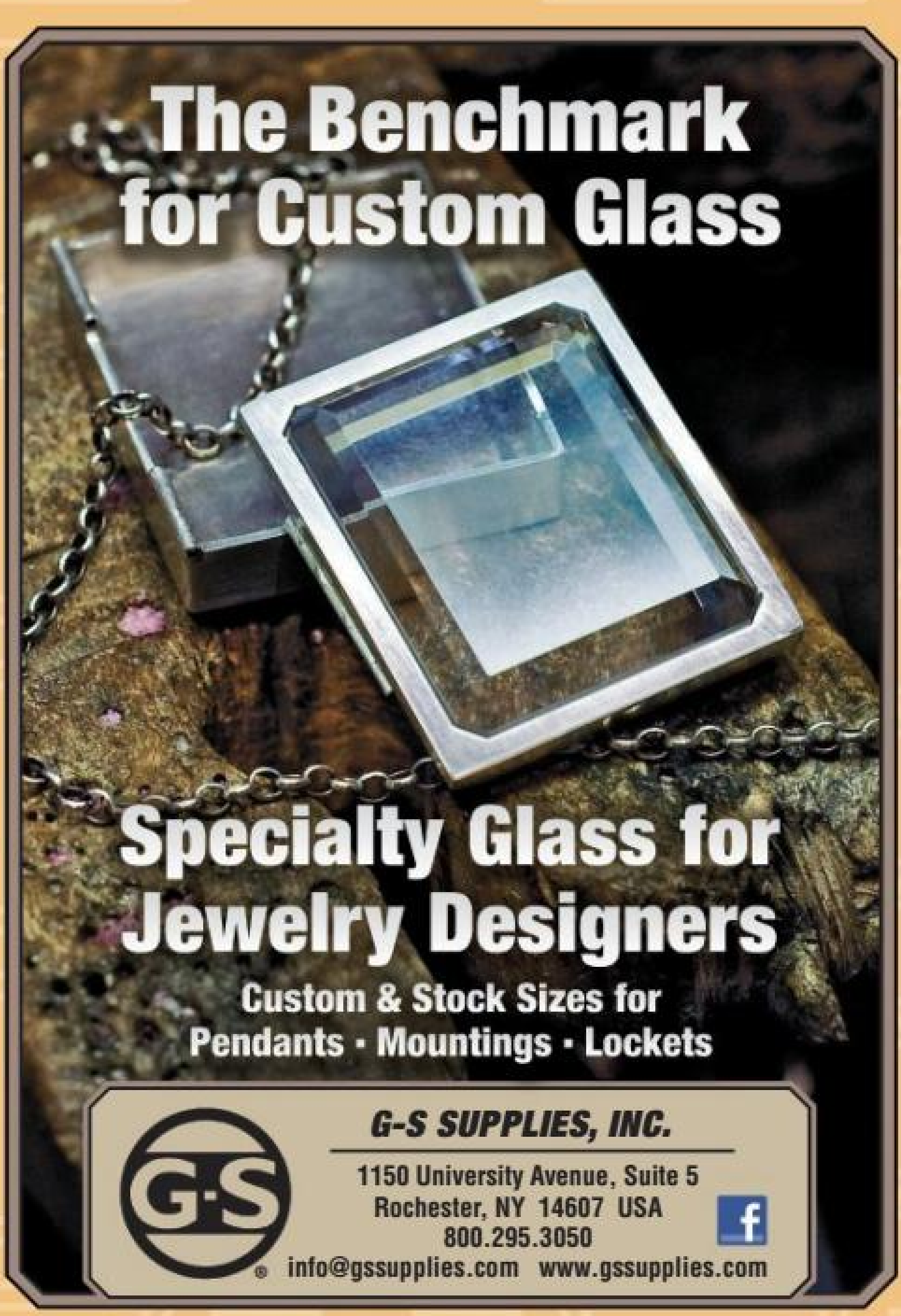

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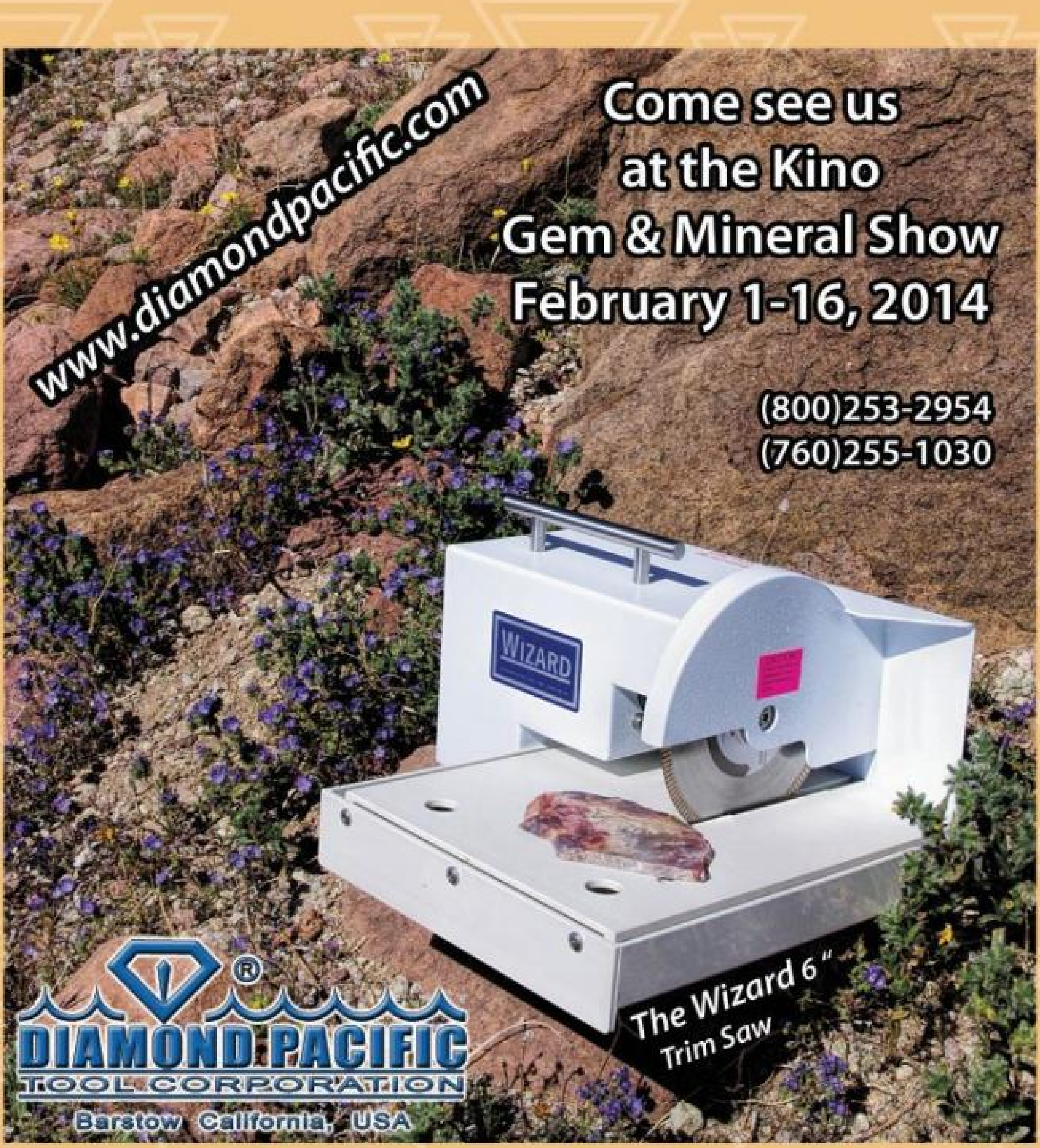

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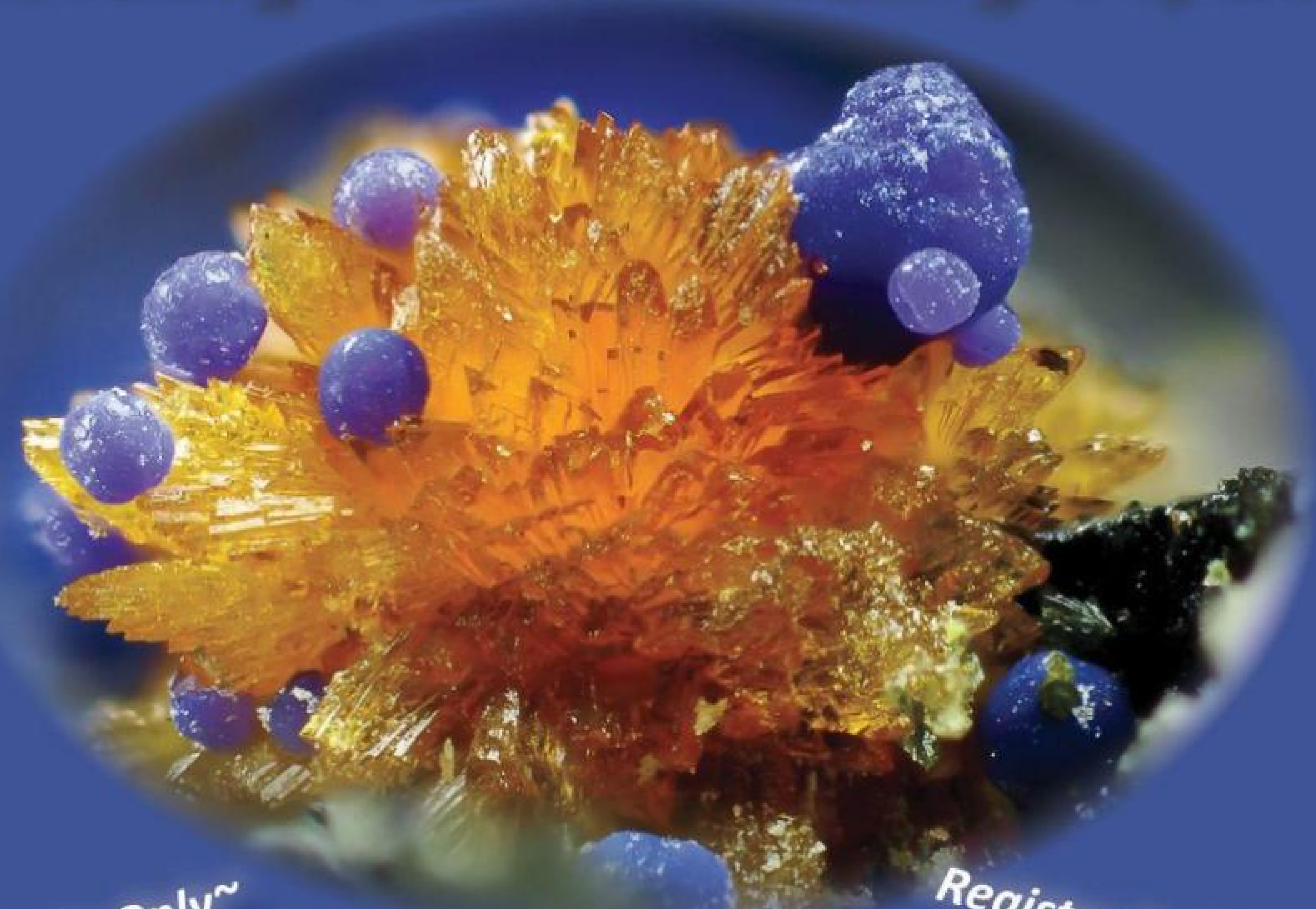

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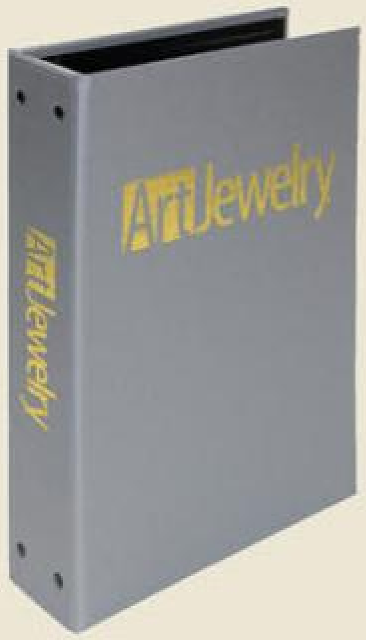

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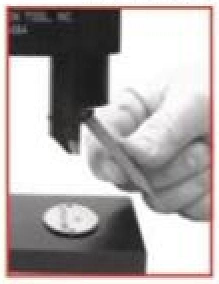

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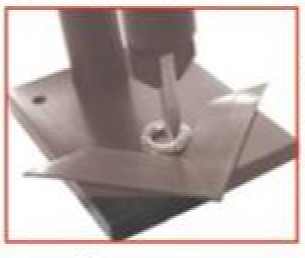

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P20392

No matter what medium you work in, there are some jewelry-making techniques that are so essential, you'll use them in nearly every project you make. These tutorials will walk you through the beginner techniques that you'll need to learn in order to make the projects in this issue.

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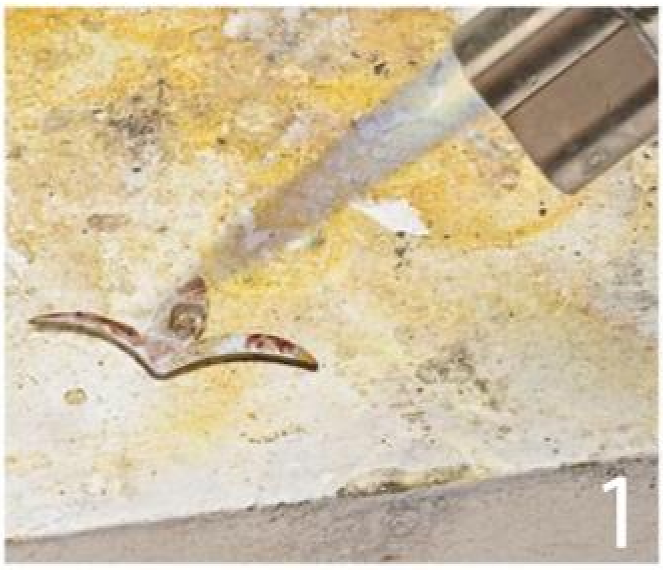
metalworking techniques

SWEAT SOLDERING

Apply flux to both metal pieces you want to join. Place the smaller piece on a soldering pad. Heat the piece until the flux is a white crust. Place solder pallions on the smaller metal piece, and heat it until the solder flows **[1]**. Using soldering tweezers, quickly position the smaller metal piece solder-side down on the larger piece. Heat both pieces from above and below until the solder melts again **[2]**. A bright line of silver may appear at the edge where the two metal pieces meet, or the smaller metal piece may slightly drop to indicate that the solder has reflowed. Quench the piece in water.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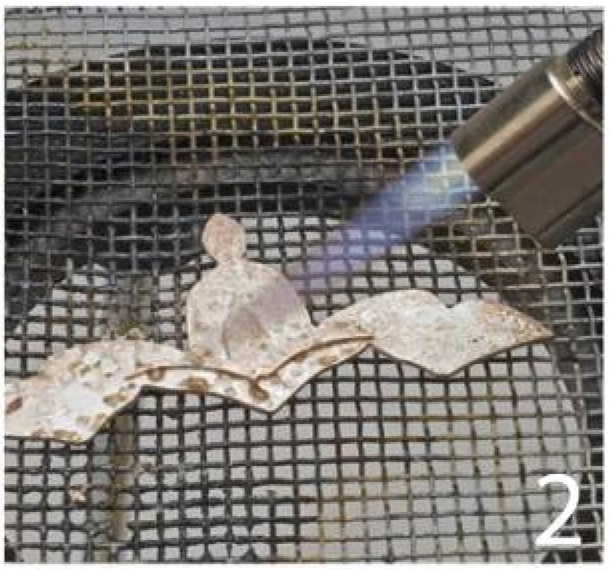
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SAWING

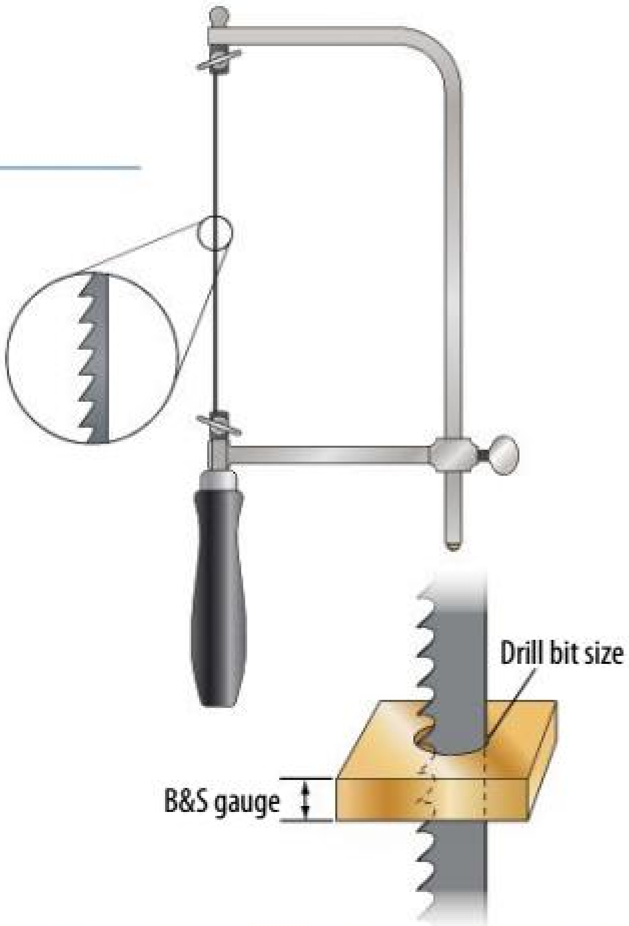
Select a saw blade that is the correct size for the gauge (thickness) of the metal you're going to cut. (You can download a free "Metal Piercing Chart" to help you at **www.artjewelrymag.com/reference**.)

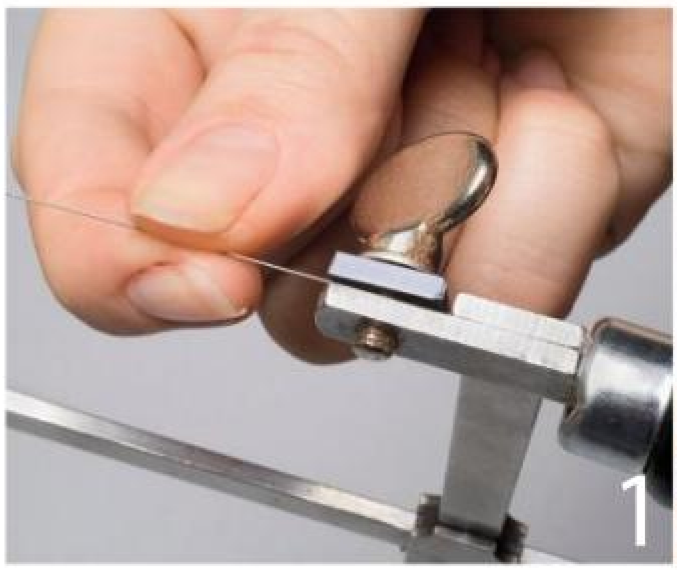
To thread a saw blade, insert the blade, teeth facing down and out, away from the frame, into the top wing nut of the frame, and tighten the nut. Brace the handle in the hollow of your shoulder, and apply pressure to the saw frame against your bench pin. Maintaining pressure, insert the bottom of the blade into the wing nut closest to the handle **[1]**, and tighten the nut **[2]**.

The blade should be taut and make a high-pitched "ping" when you pluck it with your thumbnail. If you get a dull "twang" sound, reinstall your blade while putting pressure on the saw frame. Then, lubricate the blade with beeswax.

Sit in an erect posture with the top of your workbench at upper chest level. Slouching or having your work too low causes back and wrist strain and leads to broken blades.

Grip the saw frame loosely in your hand. Use long, smooth motions, using as much of the blade as possible. The blade will work best when it's perpendicular to the metal **[3]**. Putting excessive pressure on the saw frame will make you work harder. Turn corners by sawing in place while slowly turning the metal; trying to turn the saw will break the blade.

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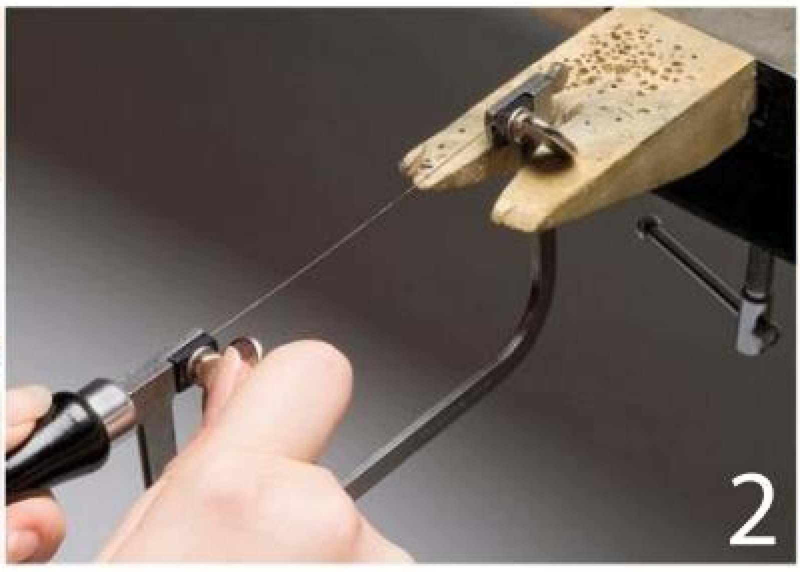
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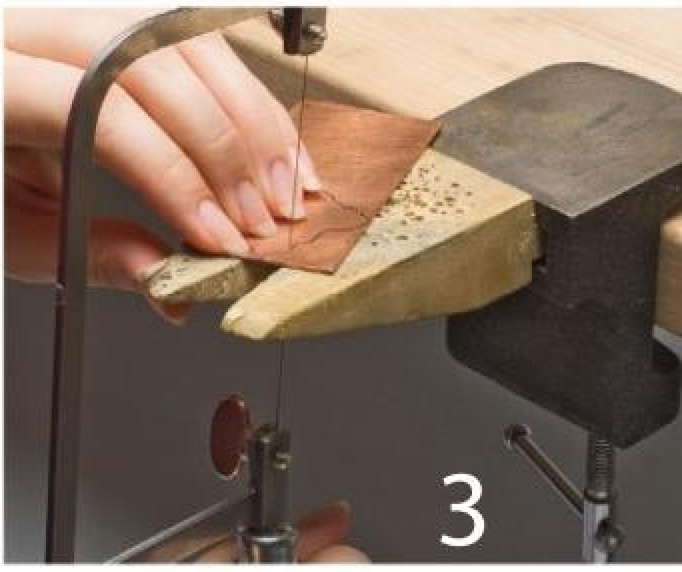
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PATINATING WITH LIVER OF SULFUR

Polish your piece before patinating. (If you tumble-polish your piece after patinating, reserve the used shot for future patinated pieces, or scrub and rinse your shot and barrel thoroughly; liver of sulfur residue can contaminate other pieces.) Oil and dirt on the piece can affect the patina, so use a degreasing soap to clean the metal before patinating.

Prepare a liver of sulfur solution according to the manufacturer's instructions. Dip your metal in the solution with tweezers for a few seconds, then rinse the metal in cool water to stop the chemical reaction. For a darker patina, continue to dip and rinse the metal. Use a brass brush with soapy water, a polishing cloth, or pumice powder to remove or modify the patina. By using different temperatures and amounts of water to make the liver of sulfur solution, you can create different colors of patina; experiment until you achieve the desired color.

If you don't want your entire piece to have a patina, use a soft-bristle brush to apply the liver of sulfur solution to select areas. Dip your brush into the solution, and dab it onto your piece. Follow the same instructions as above until you achieve the desired color.

SANDING

To give your metal the desired finish, smooth the surface and/or edges by sanding with progressively finer grits of sandpaper. Begin with a coarse grit (220–400) and work up to a fine grit (600–1000). Rub each grit of sandpaper back and forth in one direction. When you switch to the next-finer grit, rub the sandpaper perpendicular to the marks from the previous grit until you can no longer see them.

TUMBLE POLISHING

Place steel shot into the tumbler's barrel. Although you can use any shape of steel shot, a combination of shapes works best; the various shapes polish crevices and contours differently, ensuring an even polish.

Pour in water to cover the shot, then add a pinch of burnishing compound. Place your jewelry in the tumbler and seal the barrel. Turn on the tumbler, and let it run for 2–3 hours or more. Pour the contents of the tumbler into a sieve over a sink, and rinse. Remove your jewelry and dry it. Dry the shot before storing it.

PICKLE

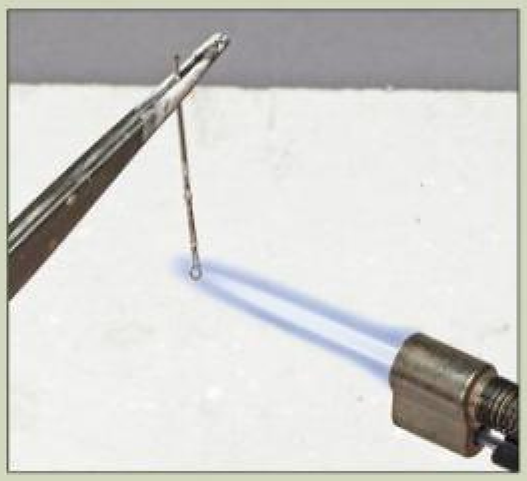
Pickle is a mildly acidic solution that cleans oxides from metal by removing small amounts of copper. Pickle is generally sold in powdered form and is available from jewelry-supply companies. To make a pickle solution, mix the powder with water according to the manufacturer's instructions.

If steel (binding wire or tweezers) comes in contact with pickle, it can cause a chemical reaction that will copper-plate whatever metal is in your solution. To prevent this, use copper or plastic tongs to place metals in the solution.

wirework techniques

BALLING UP WIRE

Use cross-locking tweezers to grasp a piece of wire at its midpoint, and dip the wire in flux. Hold the wire vertically, and lower one end of the wire into the tip of the inner blue cone of your torch's flame. After a ball forms at the end of the wire, remove the flame, and then quench, pickle, rinse, and dry the wire.



MAKING AN EAR WIRE

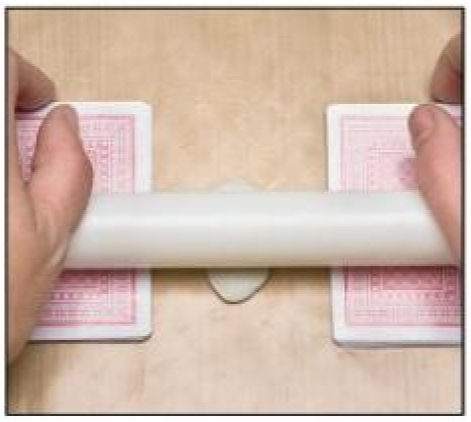
Cut two 2-in. (51 mm) pieces of 20-gauge (0.8 mm), round, sterling silver wire. Ball up one end of each wire (see "Balling Up Wire," *left*).

Use roundnose pliers to grasp a wire behind the ball. Rotate the wire around the pliers jaw, making a small U-bend. Make a second U-bend in the middle of the wire by wrapping it around a ¼-in. (6.5 mm) dowel. Use roundnose pliers to grasp the wire ¼ in. (6.5 mm) from the end without the ball, and slightly bend the wire away from the balled end. Repeat with the other wire.

Place an ear wire on a bench block, and use the flat face of a chasing hammer to work-harden the wire. Avoid flattening the portion of the U-bend that will fit in the ear lobe. Forging the wire will open up the U-bend a bit. Gently squeeze the U-bend with chainnose pliers to restore its shape. Use 600-grit sandpaper to sand the wire end smooth, and polish the ear wire with a cloth. Repeat with the other ear wire.

metal clay techniques

ROLLING METAL CLAY

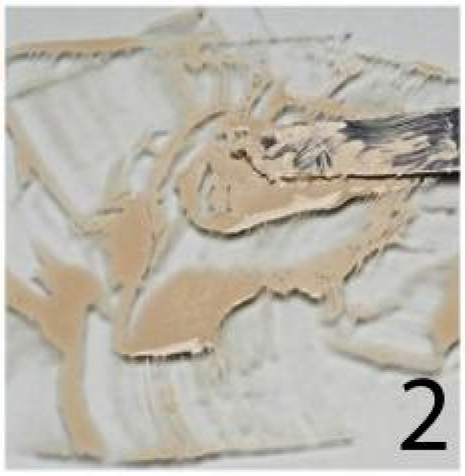


Metal clay dries rapidly, so remove only the amount you will use during a given work session. Store unused clay in an airtight container with a small piece of moist sponge or paper towel. Cover clay with plastic wrap while you are not working with it. Use a spray bottle to remoisten the clay if it begins to dry out. Apply olive oil or natural hand balm to your hands, tools, and work surface to prevent the clay from sticking. Decide how thick you want your metal clay sheet to be. Make two stacks of either playing cards, mat board, or thickness guides that equal that thickness. Place your lump of clay on your work surface between the two even stacks. Roll the clay to a uniform thickness, using an acrylic roller or PVC tube. Rotate the clay 90° and roll it again.

MAKING PASTE AND SLIP

Collect dried, unfired clay scraps and filings, and place them on a glass work surface. Using a tissue blade or razor blade, chop the clay into a fine powder **[1]**. Add some water, and use a plastic or stainless steel palette knife to blend the mixture into a thick paste **[2]**. For slip, add a little more water, and blend again. Store in a small, airtight container.

1



2

DRYING METAL CLAY

Metal clay can be air-dried or placed on a mug warmer to shorten the drying time. Alternatively, place the metal clay in a food dehydrator dedicated to nonfood use.

To check the moisture content of metal clay, place the piece on a sheet of glass. After 15 seconds, lift the clay from the glass. Any condensation on the glass indicates that the clay contains moisture. Do not fire the clay until it is completely dry.

safety basics

Metal clay

- Use your kiln in a well-ventilated area to sinter clay.
- All tools should be dedicated for nonfood use.
- Follow manufacturers' instructions for programming your kiln and sintering times and temperatures.
- Do not torch-fire metal clay pieces that have a core inclusion, such as cork or wood clay.
- Do not sinter or torch-fire metal clay pieces that are not completely dry, as they may explode.

Metals

- Wear eye protection at all times while working with metals, wire, and metalsmithing tools.
- Wear a non-flammable apron to protect your clothing.
- Tie back long hair.
- Work in a well-ventilated area at all times.
- Wear close-toed shoes.
- Do not wear clothing or jewelry that might get caught in machinery or catch fire.

Polymer clay

- Use a calibrated toaster oven to cure clay.
- Cure clay in a well-ventilated area.
- Your oven and all tools should be dedicated for nonfood use.
- Follow manufacturers' instructions for curing times and temperatures.
- Always wet-sand using wet/dry sandpaper.

All media

- Wear a dust mask while working with materials and tools that generate particulates.
- Read all Material Safety Data Sheets (MSDSs) before using a new material, and keep a copy of the MSDS for any material you use.
- Do not use tools or chemicals in ways that are contrary to the manufacturer's intended purpose.
- Wear protective gloves while handling caustic materials or chemicals.
- Keep a properly rated fire extinguisher and a source of clean water near your workstation.
- Keep cutting tools sharp and all tools and equipment properly maintained.

toolboxes

Finishing

- Brass brush
- Copper tongs
- Files: hand, needle
- Flex shaft or buffing wheel, buffs, polishing compound
- Liver of sulfur or other patina, lidded glass container
- Microcrystalline wax
- Polishing cloth
- Polishing papers
- Sandpaper: various grits
- Scouring pad
- Steel burnisher
- Steel wool
- Tumbler, steel shot, burnishing compound
- Ultrasonic cleaner

Hammering

- Bench block or anvil
- Hammer: ball peen, chasing, cross peen, dead blow, utility
- Mallet: rawhide or plastic

Metal clay

- Acrylic or PVC roller
- Airtight storage container
- Brass brush
- Burnisher
- Clear, hard plastic sheet
- Craft knife
- Drinking straw
- Fine-tip paintbrush
- Flexible Teflon sheet
- Kiln, kiln shelf
- Mug warmer
- Needle files
- Needle tool
- Olive oil or natural hand balm
- Pin vise or holder, drill bits
- Plastic wrap
- Playing cards or thickness gauge
- Rubber block
- Shape cutters
- Smoothing tool
- Spatula or palette knife
- Syringe
- Texture sheets or molds
- Tissue blade: flexible, rigid, or wavy
- Tumbler, steel shot, burnishing compound
- Vermiculite, kiln-safe container
- Water: distilled
- Wet/dry sandpaper: various grits, or nail buff/emery board

Sawing/piercing

- Adhesive bandages
- Alligator tape (optional)
- Bench pin
- Center punch: manual or automatic
- Dividers
- Files: hand or needle
- Flex shaft, drill bits
- Jeweler's saw frame, saw blades
- Lubricant or beeswax
- Rubber cement or glue stick
- Safety glasses

Soldering/Annealing

- Anti-flux
- Binding wire
- Borax (for borax solution)
- Copper tongs
- Fire-resistant surface: soldering pad, firebrick, or charcoal block
- Flux, flux brush
- Pickle pot with pickle
- Solder: hard, medium, easy
- Soldering pick
- Sparker: manual or automatic
- Third hand, insulated cross-locking tweezers
- Torch, various tips
- Sandpaper: various grits
- Tumbler, steel shot, burnishing compound

Wirework

- Bench block or anvil
- Cutters: side, end, or flush
- Hammers: chasing, ball peen, cross peen
- Mallet: rawhide or plastic
- Mandrels or dowels
- Needle files
- Pliers: chainnose, flatnose, roundnose, parallel, nylon jaw
- Polishing cloth
- Sandpaper: various grits
- Tumbler, steel shot, burnishing compound

ONLINE EXTRA

See everything in these toolboxes and download a PDF at **www.artjewelrymag.com/reference.**

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4. Other classes mailed through the USPS	0	0
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D. Free distribution		
1. Outside-county free distribution	0	0
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4. Other non-USPS free distribution	150	150
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F. Total distribution	29,602	28,014
G. Copies not distributed	16,418	15,629
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i. Percent paid and/or requested	99.17%	99.17%

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- Boline Strand, www.bolinestrand.com
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- 18-gauge steel sheet: Industrial Metal Sales, www.industrialmetalsales.com
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- Clear spray sealant: Local hardware or craft store

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- Oil-hardening tool stock, #9516K162: McMaster Carr, www.mcmaster.com

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- Tools, wire, and metal clay: Rio Grande, *above right*

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- Craft wire and supplies: Local craft store

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EXPERIMENT WITH A TRADITIONAL JAPANESE PATINA

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- Copper sulfate pentahydrate: Pool, aquarium, garden, or hardware stores [Our editors used Zep Root Kill: Home Depot, www.homedepot.com]

FUSE AND SOLDER A LAYERED LANDSCAPE RING

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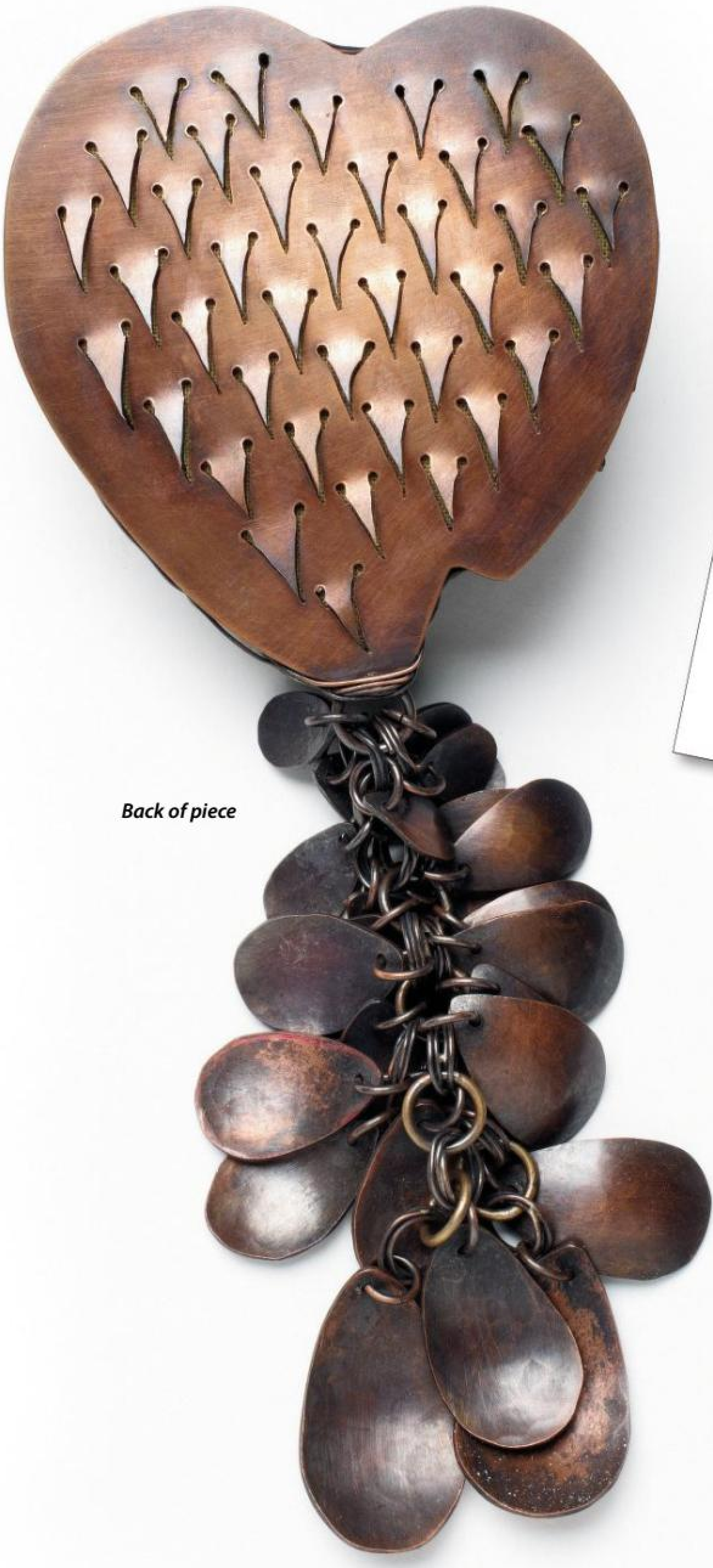

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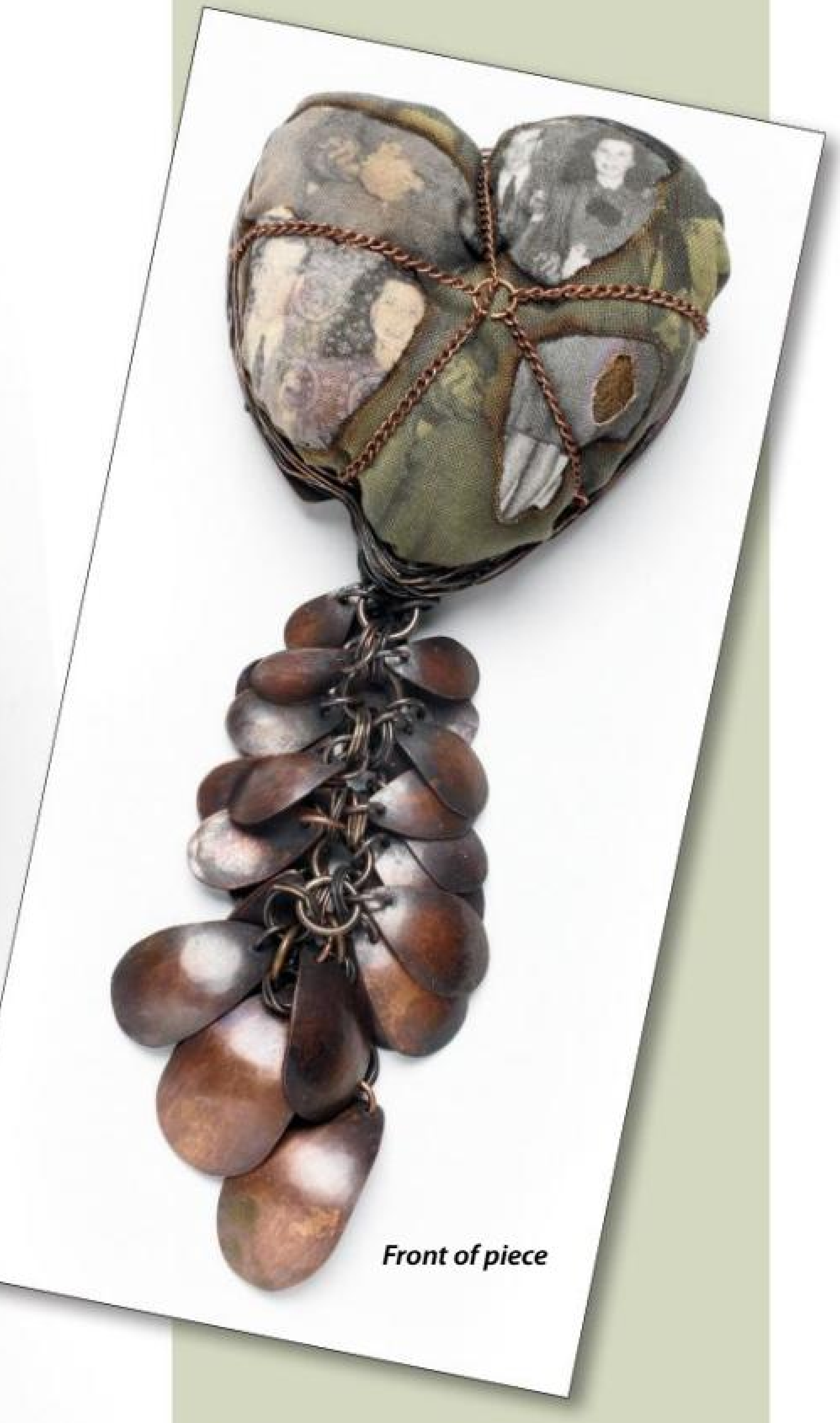

Front of piece

History Lesson

Many families have skeletons in their closet, but few are willing to drag them out. Abbey Blodgett never met her grandmother, but knows her tumultous stories of tragedy and a love triangle. Blogett dissects her mother's and aunt's troubled upbringing in her "Alice Elaine" series. *Two-Hearted* features images of Blodgett's grandmother and her first husband. The fabric is burned and chained, while the back is cut to resemble the burrs of a thistle. The spikes mercilessly latch onto fabric only to leave a tattered reminder of where the heart once was. —*Theresa D. Abelew*

AT A GLANCE

Title: *Two-Hearted*
Artist: Abbey Elaine Blodgett
Info: Made of copper and fabric; 2½ x 2¾ x 1 in. (64 x 70 x 25.5 mm).
Contact: www.abbeyelaine.com

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